GOVERNMENT OF KERALA

REPORT ON COST OF CULTIVATION OF IMPORTANT CROPS IN KERALA FOR 1980-'81 1981-'82 1982-'83

DEPARTMENT OF
ECONOMICS & STATISTICS
TRIVANDRUM

REPORT ON
COST OF CULTIVATION
OF IMPORTANT CROPS
IN KERALA
FOR
1980-81, 81-82 & 82-83

DEPARTMENT OF ECONOMICS AND STATISTICS
TRIVANDRUM, DECEMBER 1986

P R E F A C E

The data gap regarding cost of cultivation of important crops in this state is seriously felt in administering agricultural development schemes, drawing up programmes for the diversification of cropping pattern with a view to meet the socio-economic needs of the community and to maximise the economy of farming. This report relates to data on cost of cultivation survey on important crops in kerala viz. paddy (3 seasons) coconut, arecanut, pepper, tapioca, ginger and turmeric.

Eventhough the samples selected for the survey were small, it is hoped that the data obtained will give a reasonably realistic picture of the cost of cultivation and the value of products of the different crops.

The tabulation of the data collected through the surveys was done in the cost of cultivation section and the report prepared by the Joint Director (Survey & Design) of the Directorate of Economics and Statistics.

Trivandrum,
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Report on cost of cultivation of important crops in Kerala for the year 1980-81 to 1982-83

CHAPTER 1 - INTRODUCTION

1.1 General:

Agriculture is the chief economic activity of the state. It accounts for about 45% of the state's income and 48% of the total employment. Therefore its further development is a real necessity of the state. As long as cultivation in our country is in the private sector, the commercial farmer will continue the cultivation only if it is a gainful activity. The profit or loss of cultivation of a crop is the difference between the cost of various inputs used and the value of the main product and the bye-products obtained from it. The prices in an open economy depend, on the market situations both within and outside the country, input prices, specially the wages which are influenced by the environment, bargaining power of the working class, policy of the Government and various other factors. The yield, on the other hand, depends on the technology of cultivation, management, weather conditions etc.

A realistic assessment of the cost of cultivation and value of products of important crops of the state is necessary for the formulation and implementation of schemes in agricultural sector, fixation of floor and support prices, provision of incentives to cultivators etc.

Inspite of the fact that due emphasis was given on agricultural development since the commencement of planning in India, there was no concerted effort to collect data relating to cost of cultivation at the state level. At the same time there has been significant progress in the collection of data relating to crop-wise area, production, farm prices etc. The data gap in the cost aspect is seriously felt in administering agricultural development schemes, drawing up programmes for the diversification of cropping pattern with a view to satisfy the Socio-Economic needs of the community and to maximise the economy of farming. Besides these, the need of the central and state Governments to fix floor and support prices in the case of important crops also necessitates the collection of data on cost. Precise annual data on cost of cultivation of various crops are also required for working out

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state domestic product in terms of factor shares in the agriculture sector. Cost of cultivation study would also provide capital structure of the farm and input cost pertaining to cultivators growing different crops. With this end in view, Government of Kerala in G.O.No.Rt.466/79/Plg. dated 27-10-1979 sanctioned the conduct of a study on cost of cultivation of important crops in the state during the period 1979-80 to 1982-83 with the following staff.

1.2 Staff

(a) Head quarters staff

Sl.No.	Designation of Post	No. of post
(1)	Joint Director	1
(2)	Research Assistant	1
(3)	U.D.Compiler	1

(b) Field staff

(1)	U.D.Investigator	14
	L.D.Investigator	28

This study was intended to collect data on cost of cultivation of the following crops.

(1) Paddy (3 seasons)
(2) Coconut
(3) Arecanut
(4) Pepper
(5) Tapioca
(6) Ginger
(7) Turmeric

1.3. Period of the survey

The preliminary work of the survey was started in December 1979. After the completion of the spade work, the work for the first three rounds (1980-81 to 82-83) of the survey commenced on 1-4-1980 and completed on 31-3-1983. During the first round, a Joint Director was exclusively in charge of the survey. But the post of Joint Director was since abolished. Thereafter no Joint Director was posted exclusively for the survey.

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1.4. Design of the survey

The survey covered all the districts except Idukki. The survey was conducted in selected taluks which are important growing centres of the different crops. For each crop, 10 taluks were selected. The following statement gives the taluks where the survey was conducted for each crop.

Sl.No.	Name of Crop	Name of taluk
(1)	Paddy (3 seasons)	(1) Karunagappally
		(2) Kuttanad
		(3) Parur
		(4) Tirur
		(5) Kasargode
		(6) Neyyattinkara
		(7) Kottarakkara
		(8) Kunnathunad
		(9) Alathur
		(10) Taliparamba
(2)	Coconut	(1) Karunagappally
		(2) Parur
		(3) Tirur
		(4) Quilandy
		(5) Ambalapuzha
		(6) Neyyattinkara
		(7) Meenachil
		(8) Mukundapuram
		(9) Ottappalam
		(10) Kasargode
(3)	Arecanut	(1) Tirur
		(2) Kasargode
		(3) Pathanamthitta
		(4) Meenachil
		(5) Mukundapuram
		(6) Quilandy
		(7) Nedumangad
		(8) Parur
		(9) Kothamangalam
		(10) Ottappalam

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(4)	Pepper	(1)	Nedumangad
		(2)	Thiruvalla
		(3)	Muvattupuzha
		(4)	Mukundapuram
		(5)	Perinthalmanna
		(6)	Pathanamthitta
		(7)	Meenachil
		(8)	Kunnathunad
		(9)	Ottappalam
		(10)	Taliparamba
(5)	Tapioca	(1)	Neyyattinkara
		(2)	Kottarakkara
		(3)	Nedumangad
		(4)	Kunnathunad
		(5)	Perinthalmanna
		(6)	Karunagappally
		(7)	Thiruvalla
		(8)	Kothamangalam
		(9)	Muvattupuzha
		(10)	Taliparamba
(6)	Ginger	(1)	Taliparamba
		(2)	Pathanamthitta
		(3)	Muvattupuzha
		(4)	Kunnathunad
		(5)	Perinthalmanna
		(6)	Kottarakkara
		(7)	Thiruvalla
		(8)	Kothamangalam
		(9)	Ottappalam
		(10)	Quilandy
(7)	Turmeric	(1)	Nedumangad
		(2)	Thiruvalla
		(3)	Muvattupuzha
		(4)	Kothamangalam
		(5)	Perinthalmanna
		(6)	Kottarakkara
		(7)	Pathanamthitta
		(8)	Meenachil
		(9)	Mukundapuram
		(10)	Quilandy

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From each taluk, the first two villages, from the list of villages chosen for Timely Reporting Survey 1979-80, were selected. In cases, where only one village was selected for Timely Reporting Survey 1979-80 round, that village as well as the first village chosen for Timely Reporting Survey 1978-79 were selected for the survey. Thus 20 villages were selected for each crop for the cost study. In each village it was decided that 5 small holdings, 3 medium holdings and 3 large holdings are to be selected for paddy and 3 from each category for other crops.

The size group of a holding was determined on the basis of the area cultivated. The holdings selected were grouped into small, medium and large according to the criteria presented below.

Size group	Size	
	Paddy	Other crops
1	2	3
Small	$<$ 0.40 hect.	$<$ 0.20 hect.
Medium	0.40 to $<$ 2 hect.	0.20 to $<$ 0.80
Large	$\geq$ 2 hect.	$\geq$ 0.80 hect.

The frame of survey sub Nos. was used for the selection of key plots. A key plot is the survey sub No. in the frame selected using simple random sampling method to locate the selected holdings. All the plots owned by the owner of the key plot in the village constituted a holding for the survey. In the case of paddy, the selection of key plot was done using simple random sampling method from the frame of wet land survey sub division Nos., while for all other crops the selection of key plots of holdings was done from a frame consisting of the list of wet and dry land survey sub division numbers. From each village 11 key plots for paddy and 9 key plots for coconut were first selected.

Whenever the holdings selected for coconut contained area under other crops also (Viz. Arecanut, Pepper, tapioca, ginger or turmeric) those holdings were also selected for the study of such crop. In cases where sufficient number of holdings for other crops were not available among the holdings selected for coconut, key plots were selected for each other crops using the same method.

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Whereever the number of selected holdings under a size group was less than the number required, additional holdings were obtained by selecting more key plots. In cases where the total number of holdings in a village under the particular size group, were less than the required number, the balance number was additionally selected from the next lower class. However the target of studying the 11 selected holdings for paddy and 9 selected holdings for other crops was achieved whereever possible in each village by making the total number of holdings under study to 220 for paddy and 180 for each of the other crops.

In all, the three rounds of the survey, holdings selected for the first round were retained if the cultivators concerned continued to cultivate the same crop during the period. In cases where this was not possible, new plots were selected using fresh key plots. But the target of 220 holdings could not be achieved in all the 3 seasons of paddy and 180 holdings for other crops due to non-availability of the particular crop during the period in some of the selected centres.

1.5 Schedules

Three schedules were prescribed for the survey as shown below.

Schedule I

This schedule is used for listing the plots for selection of holdings and recording the details of the selected holdings.

Schedule II

This schedule is used for recording details of the cultivators, households and details like area of holdings, inventary of Agricultural implements, livestock etc.

Schedule III

This schedule is used for recording cultivation cost during every week.

1.6 Field work

The field work of the survey was attended to by 39 Investigators. This was done under the supervision of Statistical Inspectors at the taluk level and by District Officers at district level. The field staff were given necessary training in field work before they were posted to the respective villages.

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The Investigators visited the selected holdings every week and recorded the weekly operations in Schedule III.

1.7 Analysis

The tabulation and analysis of the data collected through the first round of the survey were done at the head quarters and those for the 2nd and 3rd round of the survey were done at the district offices as well as at the head quarters. The results are discussed here under as detailed below.

This report relates to the cost of cultivation of the different crops for the three rounds (1980-81 to 82-83) as follows:

1	-	Autumn paddy
2	-	Winter paddy
3	-	Summer paddy
4	-	Coconut
5	-	Arecanut
6	-	Pepper
7	-	Tapioca
8	-	Ginger
9	-	Turmeric

1.8 Method of estimation of cost

(a) Concept of cost

Different cost concepts such as cost A, Cost B and Cost C have been followed in the analysis as shown below.

Cost A

Cash and kind expenses (paid out costs) actually incurred by the cultivators. This consists of

(i) Hired human labour
(ii) Animal labour
(iii) Machine labour
(iv) Seed/Seedlings
(v) Farmyard manure
(vi) Chemical fertilizer
(vii) Plant protection
(viii) Land revenue
(ix) Irrigation cess
(x) Repair and maintenance charges of implements.

(xi) Interest on working capital

(xii) Other expenses.

Cost B

Cost A + Interest on fixed capital (including land)

Cost C

Cost B + Imputed value of family labour (including value of exchange human labour)

As leasing out land is not a common practice now in Kerala, leased-in land is not taken into account here. Also no allowance is made for managerial function in the estimation.

(b) Procedure for imputation of values of owned inputs

Some of the inputs used in the production process come from home stock. In computing the cost of cultivation, it is necessary to impute the value of these hom stock. The procedure used for the imputation of values for such inputs is indicated below.

(i) Family labour - Imputed on the basis of average wage rate per work hour of hired labour.

(ii) Owned and exchange human labour - The rate of wages per hour for hired human labour is taken for imputing the value of owned and exchange human labour.

(iii) Owned and exchange animal labour - The rate of remuneration per hour for hired animal labour is taken for imputing the value of owned and exchange animal labour.

(iv) Owned and exchange machine labour - The hire charges per hour for machine labour has been taken.

(v) Implements - Repair and maintenance charges of implements.

(vi) Owned seed - Farm produced (Home grown) seed has been evaluated at the prices prevalent in the village concerned at the time of sowing.

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(vii) Farm produced manure - Evaluated at the rates prevalent in the villages concerned.

(viii) Interest on owned fixed capital - Interest on the present value of fixed assets, such as land, farm buildings, implements, machinery, irrigation structures, equipment and live stock (only draught animals) at the rate of 10% per annum has been calculated.

(ix) Interest on working capital - Interest has been charged at the rate of 10% per annum for a period of 6 months on the working capital ie. cash and kind expenses, (excluding items in respect of which payments are generally made after harvest, ie. rent, land revenue etc.) incurred during the period of cultivation.

(x) Payments in kind - The payments in kind have been evaluated at the prices prevalent in the villages at the time of payments. Perquisites have been included in the payments in kind evaluated at market prices.

(c) Allocation of joint costs to different crops

Some of the inputs of the cultivators are common for some other crops also. For the purpose of computing the cost share of individual crops, the cost of such inputs is apportioned in the following manner.

(i) Repair and maintenance charges of implements - In proportion to the area under the crop.

(ii) Interest on owned fixed capital - In proportion to the area under the crop

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(d) Procedure for evaluation of farm assets

(i)	Own farm building (Cattlesheds, storage sheds etc.	Evaluated at prices prevailing in the villages.
(ii)	Implements & other farm machinery	Evaluated at prevalent market prices.
(iii)	Livestock (only draught animals)	Evaluated at prevalent market prices.

It may be noted that in Kerala, we have two crops in a year in most of the lands under paddy cultivation (except in Kuttanad area and in places where the irrigation facilities are available throughout the year). 86% of the total production of paddy is obtained from the Autumn and Winter seasons. Therefore in calculating the cost of production of paddy crop in each season the interest on land value at the rate of 10% per annum (the maximum rate allowed by the Nationalised Banks for fixed deposit) for the period of 6 months is taken into account. The land value is estimated at the current market rate in the different areas.

CHAPTER 2 RESULTS OF THE SURVEY

The most important crop in the state in terms of area is paddy, covering about 28% of the total cropped area. However the state produces only less than 50% of the requirements of its population. There are three seasons of paddy viz. Autumn(Virippu) Winter (Mundakan) & Summer (Punja).

The following table gives the total cropped area and the area under the paddy crops for the 3 seasons during the years 1980-81 to 82-83.

Table 2.1

Period	Total Cropped area (in hect.)	Area under paddy (in hect.)			
		Autumn	Winter	Summer	Total
1	2	3	4	5	6
1980-81	2884840	349243 (12.10)	354132 (12.27)	98324 (3.40)	801699 (27.77)
1981-82	2905257	347698 (11.94)	356073 (12.25)	103700 (3.56)	806871 (27.75)
1982-83	2862073	342660 (11.97)	352273 (12.30)	83548 (2.91)	778490 (27.18)

(Source : TRS Estimates)

(Figures in brackets give the percentage of paddy in each season to the total cropped area)

The gross area of paddy in the state for the year 1980-81, 81-82 & 82-83 comes to 27.77%, 27.75% & 27.18% respectively to the total cropped area. Of the three seasons of paddy, Autumn (Virippu) and Winter (Mundakan) are the most important crops with a coverage of more than 43% of the gross area under paddy.

The following table shows the percentage distribution of area under paddy crop in each season to the total gross area under paddy.

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Table: 2.2 Percentage of area under paddy in each season to the gross area under paddy

Period	Percentage of area under paddy			
	Autumn	Winter	Summer	Total
1	2	3	4	5
1980-81	43.56	44.18	12.26	100
1981-82	43.02	44.13	12.85	100
1982-83	44.01	45.25	10.74	100

The Autumn crop is sown during the months of April to June, and harvested during the period of August to October. The period of sowing & harvesting of winter crop is August to October and December to February respectively. The sowing of summer crop is done during the period November to December and harvesting is done during the period February to March. The total production of paddy for the 3 seasons during the year 1980-81 to 82-83 is given below.

Table : 2.3 Production of paddy (in tonnes)

Period	Autumn	Winter	Summer	Total
1	2	3	4	5
1980-81	553748 (43.53)	548500 (43.13)	169714 (13.34)	1271962 (100)
1981-82	556918 (41.57)	589154 (43.99)	193321 (14.44)	1339393 (100)
1982-83	578828 (44.31)	565704 (43.31)	161665 (12.38)	1306197 (100)

Source - TRS Estimate

(Figures in brackets give the percentage of production of paddy in each season to the total production of paddy)

The above table reveals that 86% of the total production of paddy in the state is obtained from the Autumn & Winter Crops.

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The average yield rate of paddy per hectare in each season is given in the following table.

Table : 2.4 Average yield rate of paddy in tonne/hectare

Period	Autumn	Winter	Summer
1	2	3	4
1980-81	2.4	2.4	2.6
1981-82	2.4	2.5	2.8
1982-83	2.6	2.4	2.9

Source - TRS estimates

It can be seen from the above table that the yield rate/ hectare is highest in summer season than that in other two seasons eventhough the total production of paddy in summer season is only 13.34%, 14.4% & 12.37% respectively for the years 1980-81, 81-82 & 82-83 of the total production of paddy during the 3 seasons.

Since rice is the staple food of the people of the state emphasis is being given to maximise its production in all agricultural development schemes of the state. Intensive Agricultural development programme (IADP), Intensive Agricultural area programme (IAAP) and other agricultural development programmes initiated in the state in the sixties were mainly paddy oriented. Further, all the irrigation schemes were exclusively meant for increasing paddy production by stabilising water supply to the second crop and for raising an additional crop wherever possible. The following table gives the total irrigated area and the percentage of irrigated area under paddy to the total cropped area irrigated.

Table : 2.5 Percentage of area irrigated under paddy

Period	Area irrigated under paddy (hect.)	Total cropped area irrigated (hect.)	Percentage of area irrigated under paddy to total cropped area)
1980-81	276863	380926	73
1981-82	275145	380071	72
1982-83	280805	390511	72

It can be seen from the above table that about three-fourths of the irrigated cropped area is under paddy.

2.1 AUTUMN PADDY (VIRIPPU)

2.1.1 Selected holdings:

As mentioned earlier, 220 holdings were selected for the survey on autumn crop. The details of these holdings in each size class (viz. small, medium, large) are given below:

Table : 2.1.1. Area under Autumn paddy in each size class of sample for the year 1980-81 to 1982-83

(Hectares)

Period	Size class	Area under the crop in sample	% to total area	No. of selected holdings	Area per holdings
1980-81	Small	22.89	13.60	99	0.23
	Medium	72.65	43.17	96	0.75
	Large	72.75	43.23	25	2.91
	Total	168.29	100.00	220	0.76
1981-82	Small	22.29	11.74	102	0.22
	Medium	69.21	36.45	87	0.80
	Large	98.37	51.81	31	3.17
	Total	189.87	100.00	220	0.86
1982-83	Small	20.74	11.10	100	0.21
	Medium	73.30	39.20	90	0.81
	Large	92.90	49.70	30	3.10
	Total	186.93	100.00	220	0.85

The two hundred and twenty holdings studied for the periods under report have a total operational areas of 168.29, 189.87 and 186.93 hectares for the years 1980-81, 1981-82 and 1982-83 respectively. The average size of holdings in each round is 0.76 hectare, 0.86 hect. and 0.85 hectare respectively.

2.1.2. Cost of Cultivation:

The cost of cultivation of Autumn paddy is estimated under the three different concepts of cost (viz. Cost 'A', Cost 'B', and Cost 'C') as stated in para 1.8 (Method of estimation).

Cost A: The estimates of cost of different items per hectare of Cost 'A' is given in Appendix I and the percentage distribution of these items to the total cost 'A' is given in Appendix II.

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2.1.3. Hired human labour:

Employment of hired human labour is common in paddy cultivation. Human labour consists of hired labour, exchange labour and family labour. Of these, hired human labour formed the major portion. This is the case in all classes irrespective of the size group of holdings. The percentage of hired labour hours engaged in autumn paddy cultivation to the total labour hours' is given below for males and females separately for each size group of holdings for the three rounds of the survey.

Table : 2.1.2. Percentage distribution of hired human labour hours engaged in paddy cultivation to the total human labour hours

Period	Sex	Size class			
		Small	Medium	Large	All
1	2	3	4	5	6
1980-81	Male	29.22	32.69	26.84	29.90
	Female	51.30	61.07	71.66	63.69
	Total	80.52	93.76	98.50	93.59
1981-82	Male	24.35	32.35	36.98	33.32
	Female	50.10	57.34	58.36	56.80
	Total	74.45	89.69	95.34	90.12
1982-83	Male	21.30	37.10	27.43	30.90
	Female	49.55	53.12	70.34	60.04
	Total	70.85	90.12	97.77	90.94

The above table reveals that the proportion of hired labour to total human labour input steadily increases with the increase in the size of holdings. Cultivators having 2 hectares and above are seen to depend for more than 95% of their requirements on hired labour.

Among the various input costs, hired human labour is the major component accounting half of the total cost 'A'.

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The cost per hectare of hired human labour for each year for different size classes is given below:

Table: 2.1.3. Cost per hectare of hired human labour (in Rs.)

Period	Size class			
	Small	Medium	Large	All
1980-81	1320 (45.02)	1391 (48.77)	1354 (51.25)	1366 (49.26)
1981-82	1569 (42.12)	1799 (47.74)	1846 (52.41)	1796 (49.41)
1982-83	1642 (47.22)	1837 (50.10)	1787 (51.63)	1791 (50.55)

(Figures in brackets give the percentage to total cost 'A')

The cost of hired human labour per hectare of autumn paddy crop works out to Rs.1366, Rs.1796 and Rs.1791 during the years 1980-81, 1981-82 and 1982-83 respectively. It may also be seen that 49 to 51% of the total cost 'A' comes under this item.

2.1.4. Animal labour:

Employment of animal labour is also common in paddy cultivation. As in the case of human labour, animal labour has also been classified under the 3 heads viz. hired, exchange and household animal labour. In computing the cost of exchange and household animal labour, the rate of payment of hired animal is taken into account. The following table gives the per hectare cost of animal labour and their percentage to the total cost 'A'.

Table: 2.1.4. Cost of animal labour per hectare

Period	Size class			
	Small	Medium	Large	All
1980-81	356 (12.14	308 (10.80)	239 (9.05)	235 (10.26)
1981-82	453 (12.16)	394 (10.47)	249 (7.07)	326 (8.97)
1982-83	358 (10.30)	395 (10.77)	200 (5.78)	294 (8.30)

The above table reveals that the cost of animal baour per

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hectare of autumn paddy crop works out to Rs.285, Rs.326 and Rs.294 for the years 1980-81, 1981-82 and 1982-83 respectively. It is observed that cost of animal labour per hectare steadily decreases with the increase in the size of holdings. This may be due to mechanisation of cultivation in large holdings.

2.1.5. Machine labour:

Machine labour is also grouped under 3 heads viz. hired, exchange and household. As in the case of other labour cost, the cost of exchange and owned machine labour is estimated at the rate of hire charges for the machines hired.

The cost of machine labour per hectare and its percentage distribution to the total cost 'A' is given in the following table.

Table : 2.1.5. Cost of machine labour per hectare (in Rs.)

Period	Size class			
	Small	Medium	Large	All
1980-81	18 (0.61)	51 (1.79)	50 (1.89)	46 (1.66)
1981-82	60 (1.62)	48 (1.27)	106 (3.01)	79 (2.18)
1982-83	27 (0.78)	36 (0.98)	122 (3.52)	78 (2.20)

It is observed that the cost of machine labour increases with the increase in size class. In the case of small holdings machine labour is sparingly used.

2.1.6. Seed/Seedlings:

The seed/seedlings used by the cultivators for the cultivation are mostly home produced (80% home-produced and 20% purchased). Of the seed/seedlings used by the cultivators, 18% belongs to high yielding variety. The following table gives the cost of seed/seedlings per hectare and their percentage distribution to the total cost 'A'.

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Table 2.1.6. Distribution of cost of seed/seedlings (in Rs.)

Period	Size class			
	Small	Medium	Large	All
1	2	3	4	5
1980-81	231 (7.88)	198 (6.94)	232 (8.78)	217 (7.83)
1981-82	284 (7.54)	271 (7.19)	280 (7.95)	277 (7.62)
1982-83	335 (9.63)	320 (8.73)	248 (7.17	286 (8.07)

The cost of seed/seedlings per hectare as estimated from the survey is only 8% of the total cost 'A'.

2.1.7. Manure:

As regards manure, 57.8% of the total input is home produced, and the rest is purchased. Both organic manures and chemical fertilizers are extensively used. The proportion of home produced farm yard manure applied in the fields generally varies inversely with the increase in the size of holdings (vide Appendix 2). In respect of fertilisers and insecticides, the cultivators are depending entirely on purchases from outside sources. The small farmers are depending mainly on organic manure. However, chemical fertilisers are seen widely used by all types of paddy cultivators even though during virippu season the application of chemical fertilisers poses problem of the flooding of the fields by monsoon rains. The high price of chemical fertilisers and inadequacy of working capital are deterrents in the adoption of chemical fertilisers in the recommended dosage by the subsistence farmers. Nearly one-third of the farmers applies organic manure which is mainly home produced. The average expenditure on this item per hectare of autumn paddy cultivation for the years 1980-81, 1981-82 and 1982-83 is Rs.560, Rs.627 and Rs.632 respectively and it is 20%, 17% & 18% of the total cost 'A' for these years (vide Table 2.1.7 given below)

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Table 2.1.7. Cost of manure per hectare (in Rs.)

Period	Size class			
	Small	Medium	Large	All
1980-81	603 (20.57)	562 (19.71)	545 (20.63)	560 (20.19)
1981-82	766 (20.56)	789 (20.94)	482 (13.69)	627 (17.25)
1982-83	729 (20.97)	698 (19.03)	558 (16.12)	632 (17.84)

(Figures in brackets give the percentage to cost 'A')

The combined cost of organic manure and chemical fertilizers per hectare is seen comparatively on the increase when the size of holdings decreases. It is further seen that the cost of farm yard manure (vide Appendix 2) decreases with the increase in size class while the cost of chemical fertilizers increases with the increase in the size class.

2.1.8. Pesticides and insecticides:

When compared to punja crops, the attack of pests and diseases is much less for virippu and mundakan paddy. The following table represents the expenditure for hectare and the percentage distribution of the cost of pesticides and insecticides to the total cost 'A'.

Table: 2.1.8. Cost of pesticides and insecticides (in Rs.)

Period	Size class			
	Small	Medium	Large	All
1980-81	12 (0.41)	9 (0.32)	13 (0.49)	11 (.40)
1981-82	152 (4.08)	24 (0.64)	157 (4.46)	108 (2.97)
1982-83	15 (0.43)	7 (0.19)	26 (0.75)	17 (0.48)

It is seen from the table that the percentage of the pesticides and insecticides used in 1981-82 is comparatively more than that during the years 1980-81 and 1982-83.

Contd.....

2.1.9. Land Revenue and Irrigation Coss:

The expenditure per hectare on land revenue and irrigation are given in the following table.

Table 2.1.9. Expenditure on land revenue and irrigation (in Rs.)

Period	Size class			
	Small	Medium	Large	All
1980-81	12 (0.41)	9 (0.32)	13 (0.49)	11 (0.40)
1981-82	12 (0.32)	11 (0.29)	18 (0.51)	15 (0.41)
1982-83	10 (0.29)	9 (0.25)	8 (0.23)	8 (0.23)

Under this item only a very small percentage of the total cost 'A' is involved.

2.1.10. Repair and maintenance charges of implements & machinery:

The expenditure on this item per hectare of autumn paddy is Rs.103, Rs.71/- and Rs.153/- for the years 1980-81, 1981-82 and 1982-83 respectively. The following table gives the per hectare cost of expenditure on repair and maintenance charges of implements for the various size class.

Table : 2.1.10. Cost of repair and maintenance of implements (in Rs.)

Period	Size class			
	Small	Medium	Large	All
1980-81	143 (4.88)	153 (5.36)	39 (1.48)	103 (3.71)
1981-82	87 (2.34)	85 (2.26)	58 (1.65)	71 (1.95)
1982-83	136 (3.91)	128 (3.49)	177 (5.11)	153 (4.32)

Percentage of repair and maintenance charges of implements to the total cost 'A' varies from year to year and from size class to size class.

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2.1.11. Interest on working capital:

It is estimated that the average expenditure on interest on working capital is Rs.127/-, Rs.169/- and Rs.161/- for the years 1980-81, 1981-82 and 1982-83 respectively. The following table gives the details in this regard.

Table: 2.1.11. Interest on working capital (in Rs.)

Period	Size class			
	Small	Medium	Large	All
1980-81	132	128	123	127
1981-82	173	175	164	169
1982-83	159	168	156	161

(Interest on working capital is estimated at the rate of 10% for a period of 6 months).

2.1.12. Other expenses:

The other expenses which accounts for 2%, 5% and 3% of the total cost 'A' for the years 1980-81, 1981-82 and 1982-83 are as shown below:

Table : 2.1.12. Other expenses

Period	Size class			
	Small	Medium	Large	All
1980-81	105 (3.58)	43 (1.51)	34 (1.29)	47 (1.68)
1981-82	172 (4.62)	172 (4.56)	162 (4.60)	167 (4.59)
1982-83	66 (1.90)	69 (1.88)	179 (5.17)	123 (3.47)

Contd....

2.1.13. The table below gives the major components of the cost 'A' for the years 1980-81 to 1982-83.

Table: 2.1.13. Break-up of Cost 'A' per hectare of autumn paddy

(Rs.)

Sl. No.	Components of different cost concepts	1980-81	1981-82	1982-83
1	2	3	4	5
1	Hired Human labour	1366	1796	1791
2	Other labour (Animal labour and machine labour)	331	405	372
3	Seed/Seedling	217	277	286
4	Manure (Farm yard and Chemical)	560	627	632
5	Plant protection	11	108	17
6	Land Revenue and Irrigation Cess	11	15	8
7	Interest on working capital	127	169	161
8	Repair and Maintenance charge of Implements including other expenses	150	238	276
9	Total Cost A	2773	3635	3543

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2.1.14. Cost B:

Cost 'B' is estimated by adding the estimated value of interest on fixed capital to cost 'A' as mentioned in para 1.8.

The following table gives the estimated interest on fixed capital per hectare of autumn paddy cultivations.

Table: 2.1.14. Interest on fixed capital (in Rs.)

Period	Size class			
	Small	Medium	Large	All
1980-81	2174 (42.58)	1863 (39.51)	1951 (42.48)	1943 (41.20)
1981-82	3123 (45.60)	2992 (44.26)	1758 (33.30)	2368 (39.45)
1982-83	3440 (49.73)	3387 (48.02)	2906 (45.64)	3154 (47.10)

(Figures in brackets represent the percentage of interest on fixed capital to total cost B)

It is seen that the estimated interest on fixed capital for the years 1980-81, 1981-82 and 1982-83 is Rs.1943/-, Rs.2368/- and Rs.3154/- respectively.

2.1.15. Cost C:

Cost C is estimated by adding the imputed value of household labour to cost B (vide para 1.8). The table below shows the cost of the household labour for different years estimated at the rate of hired human labour.

Table: 2.1.15. Estimated value of household human labour (in Rs.)

Period	Size class			
	Small	Medium	Large	All
1980-81	239 (4.47)	75 (1.57)	15 (.33)	71 (1.48)
1981-82	478 (6.52)	178 (2.57)	88 (1.64)	166 (2.69)
1982-83	609 (10.36)	237 (3.25)	50 (0.78)	185 (2.69)

(Figures in brackets give the percentage to total cost TCI)

Contd.....

The above table reveals that 1%, 3% and 3% of the total Cost 'C' accounts for household labour. It is also seen that household labour is increasing year by year. It has increased from 1% in 1980-81 to 3% in 1982-83. The family labour diminishes as the size of holdings increases. This indicates that among large size holdings family labour is employed to a very limited extent.

2.1.16. The estimates of cost for autumn paddy under various cost concepts are given below.

Table: 2.1.16. Estimated cost of Autumn paddy per hectare under various cost concepts for the years 1980-81, 1981-82 and 1982-83

Concept of Cost	Period	Size class			
		Small	Medium	Large	All
1	2	3	4	5	6
Cost A	1980-81	2932	2852	2642	2773
	1981-82	3725	3768	3522	3635
	1982-83	3477	3667	3461	3543
Cost B	1980-81	5106	4715	4593	4716
	1981-82	6848	6760	5280	6003
	1982-83	6917	7054	6367	6697
Cost C	1980-81	5345	4790	4608	4787
	1981-82	7326	6938	5368	6169
	1982-83	7526	7291	6417	6882

The cost of cultivation per hectare of the large size group is less than that of the other size groups. This may be due to the economy of the large scale cultivation.

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2.1.17. Analysis of output:

The value of the product and by-product of paddy viz. paddy and straw for the different years is given in the following table.

Table : 2.1.17. Value of product and bye-product per hectare (in Rs.)

Period	Product/ bye-product	Size class			
		Small	Medium	Large	All
1	2	3	4	5	6
1980-81	Paddy	2540	2482	3080	2662
	Straw	709	665	358	538
	Total :	3249	3147	3438	3200
1981-82	Paddy	3288	3331	3563	3446
	Straw	973	796	540	685
	Total :	4261	4127	4103	4131
1982-83	Paddy	3527	3571	4294	3997
	Straw	965	942	442	636
	Total :	4492	4513	4736	4633

The table reveals that the value of product obtained from large holdings is more than that of the small and medium holdings and the value of bye-product decreases as the size class increases in all the years. That is when yield is more straw is less. The total value of output per hectare is Rs.3200/-, Rs.4131/- and Rs.4633/- for the years 1980-81, 1981-82 and 1982-83 respectively.

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2.1.18. Cost of production of paddy per quintal:

Cost of producing one quintal of paddy is arrived at by dividing the cost of cultivation per hectare (by deducting the value of by -product per hectare from the cost of cultivation per hectare) by the yield per hectare. The table below gives the cost of production of autumn paddy per quintal for the years 1980-81 to 1982-83.

Table : 2.1.18. Cost of production of Autumn paddy per quintal

Period	Concept of cost	Size class			
		Small	Medium	Large	All
1980-81	A	113	121	97	108
	B	223	223	180	202
	C	235	227	180	205
1981-82	A	138	151	142	145
	B	294	304	225	261
	C	343	313	230	269
1982-83	A	117	133	121	125
	B	277	299	230	264
	C	305	310	240	272

The cost of production of paddy per quintal varies from size class to size class and year to year. When all the sample holdings are taken together, the cost of production of paddy per quintal is found to be lowest in 1980-81 compared to the cost of production in the other two years. It may also be seen that the cost of production of paddy per quintal is highest in medium holdings.

2.2. WINTER PADDY (MUNDAKAN)

2.2.1 Selected holdings:

As mentioned earlier, the target of 220 holdings could not be selected in this season due to the non-avilability of the particular crop during the period in some of the selected centres. Therefore during the year 1980-81, 1981-82 and 1982-83, the number of holdings selected were 187, 208 and 195 respectively. The details of these holdings in each size class (viz. small, medium and large) are given below:

Table 2.2.1 Total area under winter paddy in each size class for the year 1980-81 to 1982-83 (hectares)

Period	Size Class	Total area under the crop	Percentage to total area of selected holdings	No. of selected holdings	Area per holding
1	2	3	4	5	6
1980-81	Small	18.58	13.88	84	0.22
	Medium	63.65	47.55	82	0.78
	Large	51.63	38.57	21	2.45
	Total	133.86	100.00	187	0.72
1981-82	Small	20.17	13.41	96	0.21
	Medium	71.14	47.30	95	0.75
	Large	59.08	39.29	17	3.48
	Total	150.39	100.00	208	0.72
1982-83	Small	18.07	13.60	90	0.20
	Medium	65.61	49.36	86	0.76
	Large	49.24	37.04	19	2.59
	Total	132.92	100.00	195	0.68

The number of holdings studied for the periods under report have a total operational areas of 133.86, 150.39 and 132.92 hectares respectively. The average size of holdings in each round is 0.72 hect., 0.72 hect., and 0.68 hectares respectively.

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2.2.2 Cost of cultivation of winter paddy:

The cost of cultivation of winter paddy is estimated under the three different concepts of cost as mentioned in para 1.8 (Method of estimation).

The estimated cost of different items per hectare of cost 'A' is given in Appendix III and the percentage distribution of these items to the total cost 'A' is given in Appendix IV.

2.2.3 Hired human labour:

Employment of human labour is common in winter paddy cultivation. Human labour is classified into hired human labour, exchange human labour and household human labour. The percentage of 'hired human labour hours' in winter paddy cultivation to the total 'human labour hours' is given below for males and females separately for each size group of holdings for the three rounds of the survey.

Table 2.2.2 Percentage distribution of hired human labour hours in winter paddy cultivation to the total human labour hours

Period	Sex	Size Class			
		Small	Medium	Large	All
1	2	3	4	5	6
1980-81	M	24.65	33.82	31.81	31.71
	F	54.99	59.32	66.69	61.27
	T	79.64	93.14	98.50	92.98
1981-82	M	24.24	32.81	27.45	29.58
	F	45.11	56.82	67.92	58.92
	T	69.35	89.63	95.37	88.50
1982-83	M	23.21	29.30	30.36	28.73
	F	44.43	57.27	67.39	58.80
	T	67.64	86.57	97.75	87.53

The above table reveals that the hired human labour hours accounted for 93%, 89% and 88% of the total human labour hours of winter paddy cultivation for the years 1980-81, 1981-82 and 1982-83 respectively. It is further seen that the female hired

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human labour is the largest component of hired human labour. It may also be seen that the percentage of hired human labour to total human labour hours decreases as years go on. This may be due to the increase in the family labour due to land reforms and the high cost of hired human labour.

It may also be seen from the table that the proportion of hired human labour to total human labour input is steadily increasing with the increase in the size of holdings. The dependence on internal supply of labour is high in the case of cultivators of small holdings.

Among the various input cost hired human labour is the major component accounting 48% to 49% of the total cost 'A' during the years under report. The cost of hired human labour per hectare for the period under report is given below:

Table: 2.2.3 Cost of hired human labour per hectare (in Rs.)

Period	Size class			
	Small	Medium	Large	All
1	2	3	4	5
1980-81	1367 (42.64	1689 (49.57)	1598 (51.29)	1609 (49.24)
1981-82	1655 (44.12)	1851 (49.77)	1953 (49.45)	1869 (48.90)
1982-83	1737 (43.50)	1912 (53.89)	1847 (42.04)	1864 (47.53)

(Figures in brackets give the percentage total cost 'A')

It is seen that as years go on the percentage of expenditure on hired human labour to total cost 'A' decreases. The wage of hired human labour expenditure per hectare of winter paddy crops worksout to Rs.1609, Rs.1869 and Rs.1864 for the years 1980-81, 1981-82 and 1982-83 respectively.

2.2.4 Animal labour:

Animal labour has been studied under 3 heads viz. hired, exchange and household animal labour. The following table gives the cost of animal labour per hectare and its percentage to the total cost 'A'.

Table: 2.2.4 Cost of animal labour per hectare (in Rs.)

Period	Size class			
	Small	Large	Medium	All
1980-81	408 (12.73)	348 (10.21)	311 (9.98)	343 (10.47)
1981-82	451 (12.02)	380 (10.25)	334 (8.41)	371 (9.71)
1982-83	480 (12.02)	315 (8.87)	514 (11.70)	411 (10.48)

The above table reveals that the cost of animal labour per hectare worksout to Rs.342, Rs.371 and Rs.411 for the years 1980-81, 1981-82 and 1982-83 respectively. It may also be seen from the above table that cost of animal labour per hectare is 10% of the total cost.

2.2.5 Machine labour:

Labour cost consists of machine labour also. The cost of machine labour per hectare and the percentage distribution of the cost of machine labour to the total cost 'A' is given in the following table:

Table : 2.2.5 Cost of machine labour (in Rs.)

Period	Size class			
	Small	Medium	Large	All
1980-81	39 (1.22)	54 (1.58)	144 (4.02)	87 (2.66)
1981-82	39 (1.04)	51 (1.37)	161 (4.05)	93 (2.43)
1982-83	44 (1.10)	22 (0.62)	246 (5.60)	108 (2.75)

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The cost of machine labour per hectare is nearly 3% of the total cost. It is comparatively higher in size class "large" except for the year 1980-81.

2.2.6 Seed/Seedlings:

It is seen that 95% of the seed/seedlings used by the cultivators is home produced. The following table gives the cost of seed/seedlings per hectare and their percentage distribution to the total cost 'A'.

Table 2.2.6 Cost of seed/seedlings (in Rs.)

Period	Size class			
	Small	Medium	Large	All
1	2	3	4	5
1980-81	365 (11.37)	295 (8.66)	316 (10.14)	313 (9.58)
1981-82	349 (9.30)	313 (8.42)	310 (7.81)	317 (8.29)
1982-83	392 (9.82)	336 (9.46)	510 (11.61)	408 (10.41)

The cost of seed/seedlings per hectare estimated from the survey increases from Rs.313 in 1980-81 to Rs.408 in 1982-83. The percentage cost of seed/seedlings to the total cost for the three years ranges from 8 to 10.

2.2.7 Manure:

Both organic manure and chemical fertilizers are seen used by the winter paddy cultivators. The table below represents the cost of manure per hectare.

Table: 2.2.7 Cost of manure per hectare (in Rs.)

Period	Size class			
	Small	Medium	Large	All
1	2	3	4	5
1980-81	755 (23.55)	664 (19.49)	523 (16.79)	623 (19.06)
1981-82	779 (20.77)	762 (20.49)	690 (17.38)	735 (19.23)
1982-83	859 (21.51)	597 (16.82)	786 (17.90)	702 (17.90)

Considering all sample holdings together it is seen that the cost per hectare on this item for the years 1980-81, 1981-82 and 1982-83 is Rs.623, Rs.735 and Rs.702 respectively. The percentage expenditure on manure to the total cost 'A' is 19%, 19% and 18% respectively.

2.2.8 Pesticides and Insecticides:

The cost of pesticides and insecticides per hectare used by the winter paddy cultivators and the percentage distribution to the total cost 'A' is given in table 2.2.8.

Table: 2.2.8 Cost of pesticides & insecticides per Hect.

Period	Size class			
	Small	Medium	Large	All
1	2	3	4	5
1980-81	22 (0.69)	13 (0.38)	6 (0.20)	12 (0.37)
1981-82	68 (1.80)	45 (1.21)	120 (3.02)	78 (2.04)
1982-83	29 (0.73)	13 (0.37)	35 (0.79)	23 (0.59)

It is seen that pesticides and insecticides were extensively used in 1981-82, when compared to 1980-81 and 1982-83.

2.2.9 Land Revenue and irrigation:

The expenditure per hectare towards Land revenue and Irrigation cess is given in the following table:

Table: 2.2.9 Expenditure towards Land revenue and Irrigation Cess per hectare

Period	Size class			
	Small	Medium	Large	All
1	2	3	4	5
1980-81	19 (0.59)	12 (0.35)	23 (.74)	17 (0.52)
1981-82	27 (0.72)	7 (0.19)	15 (.38)	13 (0.34)
1982-83	15 (0.38)	14 (0.39)	26 (.59)	18 (0.47)

(Figures in brackets gives the percentage to cost 'A')

The expenditure in this case is very small and it ranges from 0.34% to 0.52% to cost 'A'.

2.2.10 Repair and maintenance charges of implements and machinery:

When all sample holdings are taken together it is seen that the expenditure on repair and maintenance of implements and machinery is Rs.108, Rs.94 and Rs.108 respectively. The table below gives the estimated expenditure per hectare and the percentage distribution of this item to the total cost 'A'.

Table: 2.2.10 Estimated expenditure per hectare on repair and maintenance charges of implements (in Rs.)

Period	Size class			
	Small	Medium	Large	All
1	2	3	4	5
1980-81	78 (2.43)	165 (4.85)	48 (1.55)	103 (3.30)
1981-82	99 (2.64)	76 (2.05)	113 (2.85)	94 (2.46)
1982-83	172 (4.31)	95 (2.68)	102 (2.32)	108 (2.75)

The percentage of expenditure on this item to the total cost 'A' varies from size class to size class. When all sample holdings are taken together it is seen that the percentage expenditure on this item is 2 to 3 to the total cost 'A'.

2.2.11 Interest on working capital:

Interest on working capital is estimated at the rate of 10% of the working capital for a period of 6 months.

Table: 2.2.11 Estimated interest on working capital (in Rs.)

Period	Size class			
	Small	Medium	Large	All
1980-81	148	154	145	150
1981-82	173	173	183	177
1982-83	181	164	203	181

Interest on working capital is estimated at Rs.150, Rs.177 and Rs.181 respectively.

2.2.12 Other expenses:

The other expenses which accounts 0.21%, 2% and 3% of the total cost 'A' for the years 1980-81, 1981-82 and 1982-83 are as shown below:

Table : 2.2.12 Other expenses

Period	Size class			
	Small	Medium	Large	All
1	2	3	4	5
1980-81	5 (.16)	13 (0.39)	1 (0.03)	7 (0.21)
1981-82	111 (2.96)	60 (1.61)	82 (2.07)	75 (1.96)
1982-83	84 (2.11)	82 (2.31)	125 (2.84)	98 (2.50)

The table below gives the major components of the cost 'A' for the years 1980-81 to 1982-83.

Table: 2.2.13 Break-up of cost 'A' per hectare of winter paddy

(Rs.)

Sl. No.	Components of different cost concepts	1980-81	1981-82	1982-83
1	2	3	4	5
1.	Hired labour	1609	1869	1864
2.	Other labour (Animal labour & machine labour)	429	464	519
3.	Seed/Seedlings	313	317	408
4.	Manure (Farm yard and chemical)	623	735	702
5.	Plant protection	12	78	23
6.	Land Revenue and Irrigation cess	17	13	18
7.	Interest on working capital	150	177	181
8.	Other expenses including repair and maintenance charge of implements	115	169	206
	Total cost 'A'	3268	3822	3921

2.2.14 Cost 'B'

Cost 'B' is estimated by adding the estimated value of interest on fixed capital to cost 'A' as mentioned in the 'Estimation procedure'.

The following table gives the interest estimated on fixed capital per hectare of winter paddy cultivators.

Table : 2.2.14 Interest on fixed capital

Period	Size class			
	Small	Medium	Large	All
1	2	3	4	5
1980-81	3431 (51.70)	1803 (34.61)	1681 (35.05)	1982 (37.75)
1981-82	2802 (42.76)	2960 (44.32)	3240 (44.93)	3049 (44.37)
1982-83	3923 (49.56)	3446 (49.26)	3213 (42.24)	3424 (46.32)

(Figures in brackets give the percentage to cost 'B')

It is seen that interest on fixed capital increased from Rs.1982/- in 1980-81 to Rs.3424 in 1982-83. It varies from size class to size class. The percentage of interest on fixed capital to total cost 'B' is 38%, 44% and 47% respectively for the years 1980-81, 1981-82 and 1982-83 respectively.

2.2.15 Cost 'C'

Cost 'C' is estimated by adding the estimated value of household labour to Cost 'B'. The table below gives the estimated value of household labour for different years.

Table: 2.2.15 Estimated value of household human labour per hectare

Period	Size class			
	Small	Medium	Large	All
1980-81	333 (4.78)	95 (1.79)	23 (0.48)	100 (1.87)
1981-82	629 (8.76)	167 (2.44)	182 (2.46)	203 (2.87)
1982-83	780 (8.97)	286 (3.93)	43 (0.56)	263 (3.46)

(Figures in brackets give the percentage to Cost 'C'

It may be seen that 2 to 3% of the total cost 'C' accounts for household labour. It is further seen that household labour is increasing as years go on. The family labour diminishes as the size of holding increases. This indicates that in the large size holdings family labour is employed to a very limited extent.

The estimates of cost for winter paddy cultivation under various cost concepts are given below:

Table : 2.2.16 Estimated cost of winter paddy per hectare under various cost concepts

Concept of cost	Period	Size class			
		Small	Medium	Large	All
1	2	3	4	5	6
Cost 'A'	1980-81	3206	3407	3115	3268
	1981-82	3751	3718	3971	3822
	1982-83	3993	3550	4394	3921
Cost 'B'	1980-81	6637	5210	4796	5250
	1981-82	6553	6678	7211	6871
	1982-83	7916	6996	7607	7045
Cost 'C'	1980-81	6970	5305	4819	5350
	1981-82	7182	6845	7393	7074
	1982-83	8696	7282	7650	7668

The cost of cultivation per hectare increased from Rs.3268 in 1980-81 to 3921 in 1982-83.

The above table reveals that the expenses of cultivator per hectare varies from size class to size class and from year to year. As against the trend in autumn paddy cultivation, the cost of cultivation of winter paddy per hectare in the large-holdings is found to be more than that of small holdings during 1981-82 and 1982-83. The survey did not reveal the reason for this reverse trend. But it is presumed that the cost of production might have increased during these years due to natural calamities like heavy rain etc.

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2.2.17 Analysis of output

The value of paddy and straw obtained from winter paddy cultivation is given below:

Table : 2.2.17 Value of product and bye-product per hectare

Period	Product/ bye-product	Size class			
		Small	Medium	Large	All
1	2	3	4	5	6
1980-81	Paddy	2930	2091	2804	2768
	Straw	1169	1118	874	1031
	Total	4099	3809	3678	3799
1981-82	Paddy	3637	3331	4682	4018
	Straw	1118	796	651	912
	Total	4755	4127	5333	4930
1982-83	Paddy	4190	3715	5873	4579
	Straw	1195	1209	814	1061
	Total	5385	4924	6687	5640

The value of product and bye-product estimated from large holdings is greater than that of the small and medium holdings except for the year 1980-81. When all the sample holdings are taken together it is seen that the value of output increased from Rs.3799 in 1980-81 to Rs.5640 in 1982-83.

2.2.18 Cost of production of paddy per Quintal

Cost of producing one quintal of paddy is arrived at by dividing the cost of cultivation per hectare (by deducting the value of bye-product per hectare from the cost of cultivation per hectare) by the yield per hectare. The following table gives the cost of production of winter paddy per quintal for the year 1980-81 to 1982-83.

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Table: 2.2.18 Cost of production of winter paddy Per quintal (in Rs.)

Period	Concept of Cost	Size class			
		Small	Medium	Large	All
1	2	3	4	5	6
1980-81	A	91	100	102	99
	B	282	237	226	239
	C	299	242	228	245
1981-82	A	134	146	127	135
	B	294	304	291	295
	C	311	314	295	305
1982-83	A	122	142	113	125
	B	345	335	290	317
	C	385	351	292	330

The cost of production of paddy per quintal varies from size class to size class and year to year. When all the sample holdings are taken together the cost of production of paddy per quintal is found to be highest in 1981-82 when compared to the cost in other two years. It is further seen that the cost of production of paddy per quintal is highest in medium holdings and lowest in the large holdings except for the year 1980-81.

2.3 SUMMER PADDY (PUNJA)

2.3.1 Selected holdings

As in the case of winter paddy, in summer paddy also, the target of 220 holdings could not be selected due to the non-availability of the particular crop during the period in some of the selected centres.

Table: 2.3.1 Total area of Summer Paddy under each size class for the year 1980-81 to 82-83 (Hectares)

Period	Size class	Area under the crop in the sample	Percentage to total area selected	No. of holdings selected	Area under the crop per holding
1	2	3	4	5	6
1980-81	Small	13.61	22.68	79	0.17
	Medium	20.81	34.68	34	0.58
	Large	25.58	42.64	12	2.13
	Total	60.00	100.00	127	0.47
1981-82	Small	18.40	24.33	100	0.18
	Medium	14.55	19.24	28	0.52
	Large	42.67	56.43	12	3.55
	Total	75.62	100.00	140	0.54
1982-83	Small	7.64	17.75	42	0.18
	Medium	12.48	28.99	18	0.69
	Large	22.93	53.26	6	3.82
	Total	43.05	100.00	66	0.65

The number of holdings studied for the periods under report have a total operational areas of 60.00, 75.62 and 43.05 hectares respectively. The average size of holdings in each round is 0.47, 0.54 and 0.65 respectively.

2.3.2. Cost of Cultivation of Summer Paddy

The cost of cultivation of summer paddy is estimated under the three different concepts of cost as stated in para 1.8 (Method of estimation).

The estimated cost of different items per hectare of cost 'A', Cost 'B' and Cost 'C' is given in Appendix 5 and the percentage distribution of these items to the total cost 'A' is given in Appendix 6.

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2.3.3 Hired human labour

Employment of human labour is common in Summer Paddy cultivation. Human labour is classified into hired human labour, exchange human labour and household human labour. Of these, hired human labour formed the major portion. The percentage of hired human labour hours' in summer paddy cultivation to the total 'human labour hours' is given below for males and females separately for each size group of holdings for the three rounds of the survey.

Table: 2.3.3 Percentage distribution of hired human labour hours in summer paddy cultivation to the total human labour hours

Period	Sex	Size Class			
		Small	Medium	Large	All
1	2	3	4	5	6
1980-81	Male	22.40	22.58	33.81	26.42
	Female	47.75	70.86	61.54	61.70
	Total	70.15	93.44	99.35	88.12
1981-82	Male	20.66	26.04	33.59	27.46
	Female	42.10	59.37	63.84	55.21
	Total	62.76	85.41	97.43	82.67
1982-83	Male	21.89	25.88	27.56	24.45
	Female	35.23	57.94	67.36	51.17
	Total	57.12	83.82	94.62	75.62

It may be seen from the table that the hired human labour hours accounted for 88%, 83% and 76% of the total human labour hours of summer paddy cultivation for the years 1980-81, 81-82 and 1982-83 respectively. It is further seen that the female hired human labour is the largest component of hired human labour. The table reveals that the percentage of hired human labour to total human labour hours decreases as years go on. This may be due to the increase in the family labour due to land reforms and the high cost of hired human labour.

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As in the case of other two seasons, the table also reveals that the proportion of hired human labour to total human labour input is steadily increasing with the increase in the size of holdings. The dependance on internal supply of labour is high in the case of cultivators of small holdings. Cultivators having 2 hects. and above are seen to depend for 97 to 99% of their requirements on hired labour. The comparatively well-off cultivators also usually engage hired labour irrespective of the size of holdings. Among the various input cost hired human labour is the major component accounting 48% to 53% of the cost during the year under report. The cost of hired human labour per hectare for the period under report for different size class is given below.

Table 2.3.3 Cost per hectare of hired human labour (Rs.)

Period	Size class			
	Small	Medium	Large	Total
1	2	3	4	5
1980-81	1529 (53.50)	1602 (53.63)	1901 (51.31)	1713 (52.61)
1981-82	1664 (42.74)	2276 (48.13)	2221 (50.80)	2096 (48.46)
1982-83	2108 (50.61)	2379 (48.88)	2928 (53.51)	2623 (51.80)

(Figures in brackets give the percentage to total cost 'A')

It is evident from the above table that the cost of hired human labour to cost 'A' increases with the size of holdings. The wage of hired human labour expenditure per hectare of summer paddy crops works out to Rs.1713, Rs.2096 and Rs.2623 for the years 1980-81, 1981-82 and 82-83 respectively.

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2.3.4. Animal labour

Animal labour has also been studied under 3 heads viz. Hired, exchange and household animal labour. The following table gives the cost of animal labour per hectare and its percentage to the total cost.

Table 2.3.4. Cost of Animal labour per hectare

(Rs.)

Period	Size class			
	Small	Medium	Large	All
1	2	3	4	5
1980-81	286 (10.01)	232 (7.77)	294 (7.94)	271 (8.32)
1981-82	439 (11.28)	375 (7.93)	208 (4.76)	297 (6.87)
1982-83	413 (9.92)	401 (8.24)	185 (3.38)	288 (5.69)

The cost of animal labour per hectare works out to Rs.271, Rs.297 and Rs.288 for the years 1980-81, 1981-82 and 1982-83 respectively. It may be seen from the above table that cost of animal labour per hectare steadily decreases with the increase in the size of holdings. This may be due to mechanisation of labour in large size of holdings.

2.3.5. Machine labour

The cost of machine labour per hectare and the percentage distribution of the cost of machine labour to the total cost is given in the following table.

Table 2.3.5. Cost of machine labour per hectare (Rs.)

Period	Size class			
	Small	Medium	Large	All
1	2	3	4	5
1980-81	113 (3.95)	78 (2.61)	105 (2.83)	97 (2.99)
1981-82	45 (1.15)	72 (1.52)	209 (4.78)	142 (3.29)
1982-83	81 (1.94)	109 (2.24)	192 (3.51)	148 (2.92)

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The cost of machine labour per hectare is 3% of the total cost. It is comparatively higher in size class large except for the year 1980-81.

2.3.6. Seed/Seedlings

It is seen that 82% of the seed/seedlings used by the cultivators is home produced. The table below gives the cost of seed/seedlings per hectare and its percentage distribution to the total cost.

Table: 2.3.6. Cost of Seed/Seedlings

(Rs.)

Period	Size class			
	Small	Medium	Large	All
1	2	3	4	5
1980-81	231 (8.08)	210 (7.03)	213 (5.75)	216 (6.64)
1981-82	288 (7.40)	245 (5.18)	281 (6.45)	276 (6.38)
1982-83	258 (6.19)	300 (6.16)	237 (4.33)	259 (5.11)

The cost of seed/seedlings per hect. as estimated from the survey is Rs.216/-, Rs.276/- and Rs.259/- for the years 1980-81, 1981-82 and 1982-83 respectively. The percentage of the cost of seed/seedlings to the total cost for the three years ranges from 5 to 7.

2.3.7 Manure

Both organic manure and chemical fertilizers are seen extensively used. The proportion of home produced farm yard manure applied in the fields generally varies inversely with the size of holdings. The following table reveals that the cost of chemical fertilizers accounts to a higher proportion to the total cost of manure.

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Table 2.3.7. Cost of manure per hectare

(Rs.)

Period	Size class			
	Small	Medium	Large	All
1	2	3	4	5
1980-81	437 (15.29)	409 (13.69)	641 (17.30)	514 (15.79)
1981-82	896 (23.02	869 (18.38)	831 (19.01)	854 (19.75)
1982-83	872 (20.94)	947 (19.46)	903 (16.50)	910 (17.97)

Considering all sample holdings together it is seen that the average expenditure per hectare on this item for the years 1980-81, 1981-82 and 1982-83 is Rs.514/-, Rs.854/- and Rs.910/- respectively. The percentage of expenditure on manure to the cost 'A' is 16%, 20% and 18% respectively.

2.3.8. Pesticides and Insecticides

The table below gives the expenditure per hectare and the percentage distribution of cost of pesticides and insecticides used to the total cost 'A'.

Table : 2.3.8. Cost of pesticides and insecticides per hectare

(Rs.)

Period	Size class			
	Small	Medium	Large	All
1	2	3	4	5
1980-81	32 (1.12)	106 (3.55)	231 (6.23)	143 (4.39)
1981-82	89 (2.29)	282 (5.96)	152 (3.48)	162 (3.75)
1982-83	54 (1.30)	224 (4.60)	206 (3.76)	184 (3.63)

It is seen from the table that 4% of the total cost 'A' accounts for plant protection measures. When compared to other seasons it is seen that this item is extensively used in summer season.

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2.3.9. Land Revenue and Irrigation

The expenditure per hectare in the case of Land Revenue and Irrigation is given in the following table.

Table: 2.3.9. Expenditure on Land Revenue and Irrigation per hect

(Rs.)

Period	Size class			
	Small	Medium	Large	All
1	2	3	4	5
1980-81	22 (0.77)	23 (0.77)	12 (0.32)	19 (0.55)
1981-82	18 (0.46)	35 (0.74)	26 (0.59)	26 (0.60)
1982-83	13 (0.31)	42 (0.86)	19 (0.35)	25 (0.49)

The expenditure on these items is very small when compared to other items of expenditure. It ranges from 0.49% to 0.60% of the total cost 'A'.

2.3.10. Repair and maintenance charges of implements and machinery

When all the sample holdings are taken together it is seen that the expenditure on this item per hectare of summer paddy for the years 1980-81, 81-82 and 82-83 is Rs.79/-, Rs.168/- and Rs.214/- respectively. The table below gives the estimated expenditure per hect. on Repairs and maintenance charges of implements for the various size class.

Table 2.3.10. Estimated expenditure per hectare on Repairs and maintenance charges of implements (Rs.)

Period	Size class			
	Small	Medium	Large	All
1	2	3	4	5
1980-81	45 (1.58)	135 (4.52)	52 (1.40)	79 (2.43)
1981-82	119 (3.06)	181 (3.82)	185 (4.23)	168 (3.88)
1982-83	25 (0.60)	61 (1.25)	359 (6.56)	214 (4.23)

(Figures in brackets give the percentage to the total cost 'A')

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The percentage of expenditure on this item to the total cost 'A' varies from size class to size class. When all sample holdings are taken together it is seen that the percentage of this item increased from 2% in 1980-81 to 4% in 1982-83.

2.3.11. Interest on working capital

Interest on working capital is estimated at the rate of 10% of the working capital for a period of 6 months.

Table : 2.3.11. Estimated interest on working capital (Rs.)

Period	Size class			
	Small	Medium	Large	All
1	2	3	4	5
1980-81	133	135	210	158
1981-82	183	214	205	202
1982-83	202	227	243	231

The interest on working capital is estimated at Rs.158/-, Rs.202/- and Rs.231/- respectively.

2.3.12. Other expenses

The other expenses which accounts 1%, 2% and 4% of the total cost for the year 1980-81, 81-82 and 82-83 are as shown below.

Table:2.3.12. Other expenses (Rs.)

Period	Size class			
	Small	Medium	Large	All
1	2	3	4	5
1980-81	30 (1.05)	57 (1.91)	46 (1.24)	47 (1.44)
1981-82	152 (3.90)	180 (3.82)	54 (1.24)	102 (2.36)
1982-83	139 (3.34)	177 (3.65)	200 (3.65)	182 (3.60)

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The table below gives the major components of the cost 'A' for the years 1980-81 to 1982-83.

Table : 2.3.13 Break-up of cost 'A' per hectare of summer paddy (Rs.)

Sl. No.	Components of different cost concepts	1980-81	1981-82	1982-83
1	2	3	4	5
1	Hired labour	1713	2096	2623
2	Other labour - Animal labour and Machine labour	368	439	436
3	Seed/Seedling	216	276	259
4	Manure (Farm yard and chemical)	514	854	910
5	Plant protection	143	162	184
6	Land Revenue and Irrigation Cess	18	26	25
7	Interest on working capital	158	202	281
8	Other expense including repair and maintenance charge of implements	126	270	396
9	Total (Cost 'A')	3256	4325	5064

2.3.13. Cost 'B'

Cost 'B' is estimated by adding the imputed value of interest on fixed capital to cost 'A' as mentioned in the estimation procedure in para 1.8.

The following table gives the interest estimated on fixed capital per hectare of summer paddy cultivation.

Table : 2.3.14. Interest on fixed capital (Rs.)

Period	Size class			
	Small	Medium	Large	All
1	2	3	4	5
1980-81	2833 (49.78)	3644 (54.95)	2196 (37.21)	2674 (45.09)
1981-82	3087 (44.23)	3930 (45.39)	2210 (33.58)	2754 (38.90)
1982-83	2578 (38.23)	3358 (40.83)	2182 (28.51)	2593 (33.86)

(Figures in brackets give the percentage to total cost 'B')

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It is seen that medium class farmer has more fixed capital when compared to farmers belonging to small and large size class. The percentage of interest on fixed capital to total cost 'B' is 45%, 39% and 34% for the years 1980-81, 1981-82 and 1982-83 respectively.

2.3.14. Cost 'C'

Cost 'C' is estimated by adding the imputed value of household labour to cost 'B'. The table below gives the imputed value of household labour for different years estimated at the rate of hired human labour cost.

Table : 2.3.15. Imputed value of household human labour per hectare (in Rs.)

Period	Size class			
	Small	Medium	Large	All
1	2	3	4	5
1980-81	571 (9.12)	79 (1.18)	16 (0.27)	164 (2.59)
1981-82	874 (11.13)	327 (3.64)	53 (0.80)	306 (4.14)
1982-83	1376 (16.95)	342 (3.99)	199 (2.53)	449 (5.54)

It is seen from the above table that 3%, 4% and 6% of the total cost 'C' accounts for household labour during the years 1980-81, 1981-82 and 1982-83 respectively. It is also seen that household labour is increasing as years go on. It has increased from 3% in 1980-81 to 6% in 1982-83. The family labour diminishes as the size of holdings increases. As stated earlier, this indicates that among large size holdings family labour is employed to a very limited extent only.

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The estimates of cost for the summer paddy cultivation under various cost concepts are given below:

Table : 2.3.16. Estimated cost per hectare for the summer paddy under various cost concepts

Concept of cost	Period	Size class			
		Small	Medium	Large	All
1	2	3	4	5	6
Cost A	1980-81	2858	2987	3705	3256
	1981-82	3893	4729	4372	4325
	1982-83	4165	4867	5472	5064
Cost B	1980-81	5691	6631	5901	5930
	1981-82	6980	8659	6582	7079
	1982-83	6743	8225	7654	7637
Cost C	1980-81	6262	6710	5917	6094
	1981-82	7854	8986	6635	7385
	1982-83	8119	8567	7853	8106

The cost of cultivation per hectare varies from size class to size class and from year to year. The size of holdings does not appear to affect average cost significantly.

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2.3.15. Analysis of out-put

The value of paddy and straw obtained from summer paddy cultivation is given below.

Table : 2.3.17. Value of product and bye-product per hect.

Period	Product/ bye-product	Size class			
		Small	Medium	Large	All
1	2	3	4	5	6
1980-81	Paddy	3546	3858	4508	4090
	Straw	1013	615	146	505
	Total	4559	4473	4714	4595
1981-82	Paddy	3489	4946	5468	5036
	Straw	1157	505	540	689
	Total	4646	5451	6008	5725
1982-83	Paddy	5793	6061	7215	6622
	Straw	846	588	183	424
	Total	6639	6649	7398	7046

It is seen that while the value of product obtained from large holdings is greater than that of the small and medium, the value of bye-product decreases as the size class increases in all the years. That is, when yield is more straw is less. Thus the total value of output per hect is found to be Rs.4595/-, Rs.5725/- and Rs.7046/- for the years 1980-81, 1981-82 and 1982-83 respectively.

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2.3.16. Cost of Production of paddy per quintal

Cost of producing one quintal of paddy is obtained by dividing the cost of cultivation per hect. (by deducting the value of bye-product per hect. from the cost of cultivation per hect.) by the yield per hect. The following table gives the cost of production of summer paddy per quintal for the year 1980-81 to 1982-83.

Table : 2.3.18. Cost of production of Summer Paddy/quintal

(in Rs.)

Period	Concept of cost	Size class			
		Small	Medium	Large	All
1	2	3	4	5	6
1980-81	A	89	104	156	141
	B	291	505	454	450
	C	319	508	454	468
1981-82	A	130	143	109	119
	B	276	276	172	209
	C	317	287	174	219
1982-83	A	113	169	143	145
	B	222	302	201	228
	C	280	316	207	242

The cost of production of paddy per quintal varies from size class to size class and from year to year. When all the sample holdings are taken together the cost of production of paddy per quintal is found to be lowest in 81-82 when compared to the cost in other two years. It is also seen that the cost of production of summer paddy per quintal is highest in medium holdings except for the year 1980-81.

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2.4. COCONUT

Next to paddy coconut which is known as "Kalpavrikcha" is the most important crop of this State. In India, about 60% of the coconut is produced in Kerala. The climate essential for the cultivation of coconut (ie. tropical climate with heavy rain fall) prevailing in this State and the fertile land suitable for the growth of coconut palms are the main reasons for the extensive cultivation of the crop in the State. Considerable quantity of fresh coconuts, copra, coconutoil, coir and coir products required for the other parts of India are produced in Kerala. Coir and Coir products produced in this State are also exported to other countries of the world.

The total area under coconut and the average yield per hectare for the years 1980-81 to 1982-83 are given in the following table:

Table : 2.4 Area and average yield of coconut

Period	Total cropped area (Hect.)	Area under coconut (Hect.)	Average yield per hectare (Nos.)	Percentage of area under coconut to total cropped area
1	2	3	4	5
1980-81	2884840	651370	4618	22.58
1981-82	2905257	666618	4509	22.95
1982-83	2862073	674378	4576	23.56

(Source : Timely Reporting Survey Estimate)

From the above table it is seen that the percentage of area under coconut cultivation to total cropped area shows an increasing trend and it increased from 23% in 1980-81 to 24% in 1982-83.

2.4.1 Selected holdings:

As mentioned in para 1.4, 180 holdings were selected for the survey on cost of cultivation of coconut. The details of these holdings according to size class viz. small, medium and

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large are given below:

Table: 2.4.1 Area under coconut in each size class of sample for the years 1980-81 to 1982-83

Period	Size Class	Area under the crop in the samples (Hect.)	Percentage to total area	Number of selected holdings	Area per holding (Hect.)
1	2	3	4	5	6
1980-81	Small	6.95	6.75	59	0.12
	Medium	24.41	23.70	61	0.40
	Large	71.62	69.55	60	1.19
	Total	102.98	100.00	180	0.57
1981-82	Small	6.47	6.44	60	0.11
	Medium	24.45	24.33	61	0.40
	Large	69.58	69.23	59	1.18
	Total	100.50	100.00	180	0.56
1982-83	Small	7.12	7.22	59	0.12
	Medium	24.13	24.44	61	0.40
	Large	67.47	68.34	60	1.12
	Total	98.72	100.00	180	0.55

180 holdings studied for the periods under report had a total operational area of 102.98, 100.50 and 98.72 hectares for the years 1980-81, 1981-82 and 1982-83 respectively. The average size of holdings in each round was 0.57, 0.56 and 0.55 hectares respectively.

2.4.2 Number of bearing trees in the selected plots:

66 to 67% of the total coconut trees in the selected plots was found to be bearing and the remaining non-bearing. The number of bearing and non-bearing trees per hectare for the years 1981-82 and 1982-83 is given below. The figures of 1980-81 are not available.

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Table: 2.4.2 Number of bearing and non-bearing trees

Type of trees	No. of trees	
	1981-82	1982-83
1	2	3
Bearing	106	110
Non-bearing	53	56
Total	159	166

2.4.3 Cost of cultivation:

The cost of cultivation of coconut is estimated under the three different concepts of cost (viz. Cost 'A', Cost 'B' and Cost 'C') as stated in para 1.8.

2.4.3(a) Cost 'A'

The estimated cost 'A' of different items of expenditure per hectare and the percentage distribution of those items to the total cost 'A' are given in the following table:

Table: 2.4.3 (a) Components of cost 'A' per hectare of coconut cultivation

Sl. No.	Item	Cost per hectare (Rs.)		
		1980-81	1981-82	1982-83
1	2	3	4	5
1.	Labour cost	1376 (50.24)	1423 (49.95)	1549 (55.69)
2.	Seed/Seedlings	16 (0.58)	3 (0.11)	17 (0.59)
3.	Farm yard manure	576 (21.03)	592 (20.78)	583 (20.23)
4.	Chemical fertilizers	246 (8.98)	183 (6.42)	114 (3.95)
5.	Plant protection	5 (0.18)	3 (0.11)	8 (0.28)
6.	Irrigation cess & land revenue	3 (0.11)	3 (0.11)	5 (0.17)
7.	Repair & maintenance charges of implements and machinery	140 (5.12)	164 (5.76)	102 (3.54)
8.	Interest on working capital	236 (8.62)	244 (8.56)	252 (8.73)
9.	Other expenses	141 (5.15)	234 (8.20)	253 (8.77)
	Total cost 'A'	2739 (100.00)	2849 (100.00)	2885 (100.00)

(i) Labour cost:

Labour cost includes Hired human labour, Animal labour and Machine labour. Labour cost is the major component of cost 'A'. The cost estimated under this head is Rs.1376, Rs.1422 and Rs.1549 per hectare for the years 1980-81, 1981-82 and 1982-83 respectively. It may be noted that 50 to 54% of the total cost 'A' comes under this item. Hired human labour cost formed the major portion of the labour cost. It accounts 42 to 47% during the period under report. The percentage of hired human labour hours engaged in coconut cultivation to the total labour hours is given below for males and females separately for each size class group of holdings for the three rounds of the survey.

Table: 2.4.3(a) Percentage distribution of hired labour hours

Period	Sex	Size Class			
		Small	Medium	Large	Total
1	2	3	4	5	6
1980-81	Male	50.81	62.96	75.87	70.95
	Female	13.79	10.07	19.29	16.92
	Total	64.60	73.03	95.16	87.87
1981-82	Male	42.03	65.69	72.62	67.78
	Female	11.04	8.69	17.66	14.74
	Total	53.07	74.38	90.28	82.52
1982-83	Male	48.08	64.29	84.46	77.84
	Female	5.85	11.07	8.15	8.52
	Total	53.93	75.36	92.61	86.36

As in the case of paddy crop, here also it is seen that the proportion of hired human labour to total human labour input steadily increases with the increase in the size of holdings. Cultivators having more than 0.80 hectare are seen to depend for 83 to 88% of their requirements on hired labour.

ii) Seed/Seedlings:

The amount spent by the coconut cultivators towards the cost of seed/seedlings per hectare of selected coconut garden for the new plantation is Rs.16, Rs.3 and Rs.17 for the years 1980-81, 1981-82 & 1982-83 respectively.

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iii) Organic manure:

The expenditure per hectare of organic manure works out to Rs.576, Rs.592 and Rs.585 for the years 1980-81, 1981-82 and 1982-83 respectively. During the period under report 20 to 21% of the total cost accounts under this item.

iv) Chemical fertilizers

The expenditure per hectare of chemical fertilizers works out to Rs.246, Rs.183 and Rs.114 for the years 1980-81, 1981-82 and 1982-83 respectively.

v) Plant protection

The expenditure incurred on this item is Rs.5, Rs.3/- and Rs.8/- per hectare for the years 1980-81, 1981-82 and 1982-83 respectively.

vi) Irrigation and land revenue

Here also only a small percentage of the total cost 'A' is spent.

vii) Repair and maintenance charges of implements and machinery

The estimated expenditure on this item per hectare of coconut garden works out to Rs.140/-, Rs.164/- and Rs.102/- for the years 1980-81, 1981-82 and 1982-83 respectively.

viii) Other expenses:

5%, 8% and 9% of the total cost 'A' accounts for the years 1980-81, 1981-82 and 1982-83 respectively.

2.4.3 (b) Cost 'B'

Cost 'B' is estimated by adding the estimated value of interest on fixed capital to cost 'A' as mentioned in para 1.8. The details are given in the following table.

Table: 2.4.3(b) Estimated value of cost 'B' per hectare

(In Rs.)

Sl. No.	Items	Cost per hectare		
		1980-81	1981-82	1982-83
1	2	3	4	5
1.	Cost 'A'	2739	2849	2885
2.	Interest on fixed capital	11706	12442	14868
3.	Cost 'B'	14445	15291	17753

Contd....

It is seen that the estimated interest on fixed capital for the years 1980-81, 1981-82 and 1982-83 is Rs.11706, Rs.12442 and Rs.14868 respectively.

2.4.3 (c) Cost 'C'

Cost 'C' is estimated by adding the imputed value of household labour to cost 'B' as stated in para 1.8. The table below shows the cost of the household labour for different years estimated at the rate of hired human labour.

Table : 2.4.3(c) Estimated value of cost 'C' per hectare

Sl. No.	Item	Cost per hectare (in Rs.)		
		1980-81	1981-82	1982-83
1	2	3	4	5
1.	Cost 'B'	14445	15291	17753
2.	Household labour	81	223	185
3.	Cost 'C'	14526	15514	17938

The above table reveals that the estimated expenditure on household labour is Rs.81/-, Rs.223/- and Rs.185/- for the years 1980-81, 1981-82 and 1982-83 respectively.

2.4.4 Comparison of cost under various cost concepts

The estimated cost of coconut cultivation under various cost concepts is given below.

Table: 2.4.4 Cost per hectare for coconut cultivation under various cost concepts

Concept of cost	Cost per hectare		
	1980-81	1981-82	1982-83
1	2	3	4
Cost 'A'	2739	2349	2885
Cost 'B'	14445	15291	17753
Cost 'C'	14526	15514	17938

The cost of cultivation under different cost concepts shows an increasing trend during the period under report.

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2.4.5 Value of output

The value of product and by-product of coconut per hectare obtained for the period under report is given in table 2.4.5

Table : 2.4.5 Value of output per hectare

Output	Value per hectare (Rs.)		
	1980-81	1981-82	1982-83
1	2	3	4
Product	7698	6651	7767
By-product	287	321	327
Total	7985	6972	8094

The above table reveals that during the year 1981-82, the value of output per hectare is found to be less compared to the years 1980-81 and 1982-83. This may be due to fluctuation in price and production.

The three rounds of the survey shows that the cultivation of coconut in this State was reasonably economical during the years 1980-81 to 1982-83 when the interest on fixed capital is not taken into account. It is possible to substantially increase the production and improve the size of coconut by adopting the scientific methods of cultivation. As coconut cultivation is very vital in the economy of Kerala, it is highly essential to encourage its cultivation by giving liberal incentives to cultivators, fixing floor price etc. The coconut cultivation will become uneconomical if the price of products does not increase in proportion to the increase in the cost of labour and other inputs. It is necessary to guard against such a situation in the larger interest of the State.

2.5. ARECANUT

The Arecanut palm grows under different climatic and soil conditions. In Kerala it grows in areas having abundant and well distributed rainfall or under irrigated conditions. Cannanore, Malappuram, Kozhikode, Trichur and Ernakulam are the important districts where arecanut is largely cultivated.

The total area under Arecanut cultivation and the average yield per hectare for the years 1980-81 to 1982-83 are given in the following table.

Table : 2.5 Area and average yield of arecanut

Period	Total cropped area (in Hect.)	Area under Arecanut (in Hect.)	Average yield per hectare (Nos.)	Percentage of area under arecanut to total cropped area
1	2	3	4	5
1980-81	2884840	61242	176431	2.12
1981-82	2905257	61251	174724	2.11
1982-83	2862073	60816	181317	2.12

Source:- TRS estimate.

From the above table it is seen that 2% of the total cropped area is under Arecanut.

2.5.1 Selected holdings

180 holdings were selected for the estimation of cost of cultivation of Arecanut throughout the year. The details of those holdings in each size class is given in the following table.

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Table 2.5.1 Total area selected under Arecanut in each size class

Period	Size class	Area under the crop in sample (Hect.)	Percentage to total area	No. of selected holdings	Area per holding (Hectare)
1	2	3	4	5	6
1980-81	Small	7.10	20.22	97	0.07
	Medium	17.04	48.53	55	0.31
	Large	10.97	31.25	12	0.91
	Total	35.11	100.00	164	0.21
1981-82	Small	6.82	22.24	99	0.07
	Medium	15.96	52.03	55	0.29
	Large	7.89	25.73	8	0.99
	Total	30.67	100.00	162	0.19
1982-83	Small	5.82	20.07	97	0.06
	Medium	15.91	54.86	59	0.27
	Large	7.27	25.07	8	0.91
	Total	29.00	100.00	164	0.18

The number of holdings studied for the period under report has a total operational area of 35.11, 30.67 and 29.00 hectares respectively. The average size of holdings in each round is 0.21 hectare, 0.19 hectare and 0.18 hectare respectively.

2.5.2 Cost of cultivation

The cost of cultivation of Arecanut is estimated under the three different concepts of cost (viz. para 1-8 - Method of Estimation).

2.5.2(a) Cost 'A'

The estimated cost 'A' of different items of expenditure per hectare and their percentage distribution to the total cost 'A' per hectare are given in the following table.

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Table : 2.5.2(a) Components of cost of cultivation per hectare of Arecanut for the years 1980-81, 1981-82 and 1982-83

Sl. No.	Items	Cost per Hectare		
		1980-81	1981-82	1982-83
1	2	3	4	5
1.	Labour cost	1462 (56.51)	1578 (50.10)	1767 (51.32)
2.	Seed/Seedlings	-	-	-
3.	Farm yard manure	507 (19.60)	735 (23.33)	921 (26.75)
4.	Chemical Fertilizers	91 (3.52)	99 (3.14)	47 (1.37)
5.	Plant protection	111 (4.29)	157 (4.98)	69 (2.00)
6.	Irrigation Cess & Land Revenue	5 (0.19)	6 (0.19)	3 (0.09)
7.	Repair and Maintenance charges of implements machinery etc.	107 (4.14)	114 (3.62)	70 (2.03)
8.	Interest on working capital	225 (8.70)	275 (8.74)	307 (8.92)
9.	Other expenses	79 (3.05)	186 (5.90)	259 (7.52)
	Total (Cost 'A')	2587 (100.00)	3150 (100.00)	3443 (100.00)

(1) Labour Cost

As in other crops, Labour cost is the major component of cost 'A'. The cost estimated under this head is Rs.1462/-, Rs.1578/- and Rs.1767/- for the years 1980-81, 1981-82 and 1982-83 respectively. More than half of the total cost 'A' comes under this item. It is also seen that hired human labour cost formed the major portion of the labour cost. It accounts for 43 to 44% of the total cost 'A' during the period under study. The percentage of hired human labour hours engaged in Arecanut cultivation to the

Contd,...

total labour hours is given below for males and females respectively for each size group of holdings for the three rounds of the survey.

Table: 2.5.2 (a)1 Percentage distribution of hired human labour hours

Period	Sex	Size class			
		Small	Medium	Large	All
1	2	3	4	5	6
1980-81	Male	39.40	57.29	68.31	66.40
	Female	3.59	15.53	10.99	11.64
	Total	42.99	72.82	79.30	78.04
1981-82	Male	28.35	52.84	80.26	50.60
	Female	2.29	11.66	29.83	13.51
	Total	30.64	64.50	81.14	64.11
1982-83	Male	21.56	57.50	54.02	40.34
	Female	4.16	11.75	27.56	17.35
	Total	25.72	69.25	81.58	66.69

The proportion of hired human labour hours to total human labour hours steadily increases with the increase in the size of holdings. Cultivators belonging to large size of holdings depend 64 to 72% of their requirement of labour on hired human labour.

(ii) Seed/Seedlings

No expenditure is seen incurred towards the cost of Seed/Seedlings for the new plantation in the selected plots.

(iii) Farm yard mannure

During the period under report, the cost towards farm yard mannure works out to Rs.507/-, Rs.735/- and Rs.921/- for the years 1980-81, 81-82 and 82-83 respectively. It accounts 20 to 27% of the total cost 'A'.

(iv) Plant Protection

The expenditure incurred on this item is Rs.111/-, Rs.157/- and Rs.69/- per hectare for the years 1980-81, 1981-82 and 1982-83 respectively. It accounts 2 to 5% of the total cost 'A' during the period under report.

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(v) Irrigation Cess and Land Revenue:

Only a small percentage of total cost 'A' is accounted under this item.

(vi) Repair and maintenance charges of implements and machinery

The estimated expenditure on this item per hectare of Arecanut garden works out to Rs.107/-, Rs.114/- and Rs.70/- for the years 1980-81, 1981-82 and 1982-83 respectively.

(vii) Interest on working capital

Interest on working capital is estimated at the rate of 10% for a period of one year. The estimated expenditure on interest on working capital is Rs.225/-, Rs.275/- and Rs.307/- per hectare for the years 1980-81, 1981-82 and 1982-83 respectively.

(viii) Other expenses

The cost towards other expenses accounts 3 to 8% of the total cost 'A' during the years under report.

2.5.2 (b) Cost 'B'

Cost 'B' is estimated by adding the estimated value of Interest on fixed capital to cost 'A' as mentioned in para 1.8. The following table gives these details.

Table : 2.5.2 (b) Estimated value of cost 'B' per hectare

(in Rs.)

Sl. No.	Items	Cost per Hectare		
		1980-81	1981-82	1982-83
1	2	3	4	5
1	Cost 'A'	2587	3150	3443
2	Interest on fixed capital	10382	11756	13165
3	Cost 'B'	12969	14906	16608

The above table indicates that the estimated interest on fixed capital for the years 1980-81, 1981-82 and 1982-83 per hectare is Rs.10382/-, Rs.11756/- and Rs.13165/- respectively.

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Cost 'C' is estimated by adding the imputed value of household labour to cost 'B' as mentioned in para 1.8. The following table gives the household labour for different years estimated at the rate of hired human labour.

Table : 2.5.2 (c) Estimated value of cost 'C' per hectare (Rs.)

Sl. No.	Items	Cost per hectare		
		1980-81	1981-82	1982-83
1	2	3	4	5
1	Cost 'B'	12969	14906	16608
2	Imputed value of household labour	254	531	592
3	Cost 'C'	13223	15437	17200

The above table reveals that the imputed value of household labour per hectare is Rs.254/-, Rs.531/- and Rs.592/- for the years 1980-81, 1981-82 and 1982-83 respectively.

2.5.3 Comparison of cost under different cost concepts

The estimated cost of Arecanut cultivation under various cost concepts is given below.

Table: 2.5.3 Estimated cost per hectare for Arecanut under various cost concepts

Concept of cost	Cost per hectare (Rs.)		
	1980-81	1981-82	1982-83
1	2	3	4
Cost 'A'	2587	3150	3443
Cost 'B'	12969	14906	16608
Cost 'C'	13223	15437	17200

The cost of cultivation under different cost concepts shows an increasing trend during the period under report.

2.5.4 Value of Product

The value of product per hectare is found to be Rs.8021/-, Rs.7729/- and Rs.7376 for the years 1980-81, 1981-82 and 1982-83 respectively.

2.6 PEPPER

Kerala is famous for pepper. It is a rainfed crop. Black pepper which is one of the important spices is produced mainly by India and Indonesia. During the post-war period, India stood as the largest producer of pepper in the world. More than 90 percent of the country's total production is in Kerala.

The pepper vines begin to bear after three years of planting. Flowering period is from June to July. The harvesting period is from December to March. The yield mainly depends upon the fertility of the soil and the locality. The yield at the first harvest is generally poor. Full yield can be expected from the seventh year. The life of the plant ranges between 25 to 30 years. But rarely some varieties have been found to live upto 60 years.

The total area under pepper and the average yield per hectare for the years 1980-81 to 82-83 are given in the following table.

Table : 2.6 Area and average yield of pepper

Period	Total Cropped area (in hect.	Area under pepper (in hect.)	Average yield of pepper (in Kg.) per hect.	Percentage of area under pepper to the total cropped area
1	2	3	4	5
1980-81	2884840	108073	263	3.75
1981-82	2905257	108242	258	3.73
1982-83	2862073	107467	223	3.75

(Source : TRS Estimate)

Nearly 4% of the total area in the state is under pepper cultivation. It is seen from the above table that yield per hectare of pepper showed a decreasing trend during 80-81 to 82-83.

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2.6.1 Selected holdings

In all the three years a sample of 180 holdings each were selected for the survey on cost of cultivation of pepper crop. The details of these holdings in each sizeeclass is given in the following table.

Table : 2.6.2 Area under pepper in each size class

Period	Size class	Total area under the crop (hect.)	Percentage to total area of selected holdings	No.of selected holdings	Area per holding (hect.)
1	2	3	4	5	6
1980-81	Small	7.13	16.79	93	0.08
	Medium	20.42	48.09	72	0.28
	Large	14.91	35.12	15	0.99
	Total	42.46	100.00	180	0.24
1981-82	Small	7.43	16.94	90	0.08
	Medium	21.15	48.21	78	0.27
	Large	15.29	34.85	12	1.27
	Total	43.87	100.00	180	0.24
1982-83	Small	6.92	16.06	92	0.08
	Medium	20.45	47.45	72	0.28
	Large	15.73	36.49	16	0.98
	Total	43.10	100.00	180	0.24

The number of holdings studied for the periods under report has a total operational areas of 42.46, 43.87 and 43.10 hectares respectively for the years 1980-81, 81-82 and 82-83.

2.6.2 Cost of cultivation of pepper

The cost of cultivation of pepper is estimated under three different concepts of cost (Cost 'A', Cost 'B', and Cost 'C') as stated in para 1.8 (Method of estimation)

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2.6.2(a) Cost 'A'

The estimated cost 'A' of different items of expenditure per hectare and the percentage distribution of these items to the total cost 'A' are given in the following table.

Table : 2.6.2(a) Components of Cost 'A' per hectare of pepper

Sl. No.	Items	Cost per hectare (Rs.)		
		1980-81	1981-82	1982-83
1	2	3	4	5
1.	Labour cost	739 (49.07)	881 (55.79)	845 (54.69)
2.	Seed/Seedlings	5 (0.33)	4 (0.25)	11 (0.71)
3.	Organic Manure	410 (27.22)	429 (27.17)	382 (24.72)
4.	Chemical fertilizers	64 (4.25)	10 (0.63)	17 (1.10)
5.	Plant protection	39 (2.59)	41 (2.60)	55 (3.56)
6.	Irrigation Cess and Land revenue	11 (0.73)	3 (0.19)	3 (0.19)
7.	Repair and maintenance charges of implements and machinery	87 (5.78)	63 (3.99)	61 (3.95)
8.	Interest on working capital	128 (8.50)	110 (6.97)	116 (7.51)
9.	Other expenses	23 (1.53)	38 (2.41)	55 (3.56)
	Total (cost 'A')	1506 (100.00)	1579 (100.00)	1545 (100.00)

(Figures in brackets give the percentage to total cost 'A')

The various items of cost 'A' mentioned in the above table is discussed below.

(i) Labour Cost

Major component of Cost 'A' is Labour Cost. The cost estimated under this item is Rs.739/-, Rs.881/- and Rs.845 for the years 1980-81, 81-82 and 82-83 respectively. 49 to 56% of the

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total Cost 'A' comes under this item. Hired human labour cost formed the major portion of the labour cost. The percentage of hired human labour hours engaged in pepper cultivation to the total labour hours is given below for males and females separately for each size group of holdings for the three rounds of the survey.

Table: 2.6.2(a)-1 Percentage distribution of hired human labour hours engaged in pepper cultivation to the total human labour hours

Period	Sex	Size class			
		Small	Medium	Large	All
1	2	3	4	5	6
1980-81	M	49.57	65.61	62.41	62.13
	F	3.40	8.00	25.45	13.70
	T	52.97	73.61	87.86	75.83
1981-82	M	55.82	66.70	80.38	69.29
	F	4.96	5.94	9.44	6.96
	T	60.78	72.64	89.82	76.25
1982-83	M	56.54	67.55	74.34	68.39
	F	4.50	7.00	8.94	7.35
	T	61.04	74.55	83.28	75.74

It can be seen from the table that the hired human labour hours accounted for 76% of the total human labour hours of pepper cultivation during the years under report. Unlike paddy, in this case, female hired human labour is the smallest component of hired human labour. The proportion of hired human labour to the total labour input is steadily increasing with the increase in the size of holding. The dependence on internal supply of labour is high in the case of cultivators of small holdings.

(ii) Seed/Seedlings

Since the survey is conducted in bearing plots the seed/seedlings are rarely used for new plantation. Only 0.25% to 0.71% of the total cost 'A' comes under this item.

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The cost per hectare of seed/seedlings for the period under report ranges from Rs.4/- to Rs.11/-.

(iii) Farm yard mannure

It is seen that pepper cultivators prefer farm yard mannure to chemical fertilizers for the cultivation. 25% to 27% of the total cost comes under farm yard mannure. Considering all sample holdings together it is seen that the expenditure per hectare on this item is Rs.410/-, Rs.429/- and Rs.382/- for the years 1980-81, 81-82 and 82-83 respectively.

(iv) Chemical fertilizers

Chemical fertilizers are seen rarely used for pepper cultivation. The expenditure per hectare on this item is Rs.64/-, Rs.10/- and Rs.17/- for the years 1980-81, 81-82 and 82-83 respectively. 1 to 4% of the total cost 'A' comes under chemical fertilizers.

(v) Plant protection

Only 3 to 4% of the total cost comes under this item. The average expenditure on this item is Rs.39/-, Rs.41/- and Rs.55/- for the years 1980-81, 81-82 and 82-83 respectively.

(vi) Land revenue and Irrigation Cess

Only a very small percentage (0.19% to 0.73%) of the total cost 'A' comes in this item. The expenditure per hectare on this item is Rs.3/- to Rs.11/- during the period under report.

(vii) Repair and maintenance charges of implements

The survey reveals that 4 to 6% of the total cost 'A' comes under this item. In this case the estimated expenditure per hectare for pepper cultivation is Rs.87/-, Rs.63/- and Rs.61/- for the years 1980-81, 81-82 and 82-83 respectively.

(viii) Interest on working capital

Interest on working capital is estimated at the rate of 10% per annum. The interest on working capital per hectare is estimated at Rs.128/-, Rs.1 0/- and Rs.116/- for the years 1980-81, 81-82 and 82-83 respectively.

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(ix) Other expenses

The other expenses accounts 2 to 4% of the total cost 'A'. The expenditure in this head per hectare of pepper cultivation is Rs.23/-, Rs.38/- and Rs.55/- for the years 1980-81, 81-82 & 82-83 respectively.

2.6.2(b) Cost 'B'

Cost 'B' is estimated by addking the imputed value of interest on fixed capital to Cost 'A' as mentioned in the Estimation procedure (Vide para 1-8). The following table gives the interest estimated on fixed capital per hectare of pepper cultivation.

Table: 2.6.2(b) Estimated value of Cost 'B' per hectare

Items	Interest on fixed capital (in Rs.)		
	1980-81	1981-82	1982-83
1	2	3	4
Cost 'A'	1506	1579	1545
Interest on fixed capital	7138	7403	8202
Cost 'B'	8644	8982	9747

The estimated interest on fixed capital is Rs.7138/-, Rs.7403/- and Rs.8202/- for the years 1980-81, 81-82 and 82-83 respectively.

2.6.2(c) Cost 'C'

Cost 'C' is estimated by adding the imputed value of household labour to Cost 'B'. The table below gives the imputed value of household labour for different years estimated at the rate of hired human labour cost.

Table : 2.6.2(c) Estimated value of Cost 'C' per hectare (in Rs.)

Items	Household labour per hectare		
	1980-81	1981-82	1982-83
1	2	3	4
Cost 'B'	8644	8982	9747
Household labour	219	212	225
Cost 'C'	8863	9194	9972

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It is seen from the above table that the estimated cost on household labour is Rs.219/-, Rs.212/- and Rs.225/- for the years 1980-81, 81-82 and 82-83 respectively.

2.6.3 Estimated cost of pepper cultivation under various cost concepts

The estimated costs of pepper cultivation under various cost concepts are given below.

Table : 2.6.3. Estimated cost of pepper cultivation per hectare

(Rs.)

Concept of Cost	1980-81	1981-82	1982-83
1	2	3	4
Cost 'A'	1506	1579	1545
Cost 'B'	8644	8982	9147
Cost 'C'	8863	9194	9372

The cost of cultivation under different cost concepts shows an increasing trend as years go on except for the year 1982-83 in the case of Cost 'A'.

2.6.4. Value of output

The value of output per hectare obtained for the period under report is Rs.2382/-, Rs.2727/- and Rs.3010/- for the years 1980-81, 81-82 & 82-83 respectively.

2.7 TAPIOCA

Tapioca is the foremost tuber crop in India both in area and total production. Kerala is the only place where tapioca is extensively cultivated. While attempts have been made to extend its cultivation to other parts of India, Kerala remains the chief producing area.

At present, planting in Kerala is done almost throughout the year. This is possible as this area gets the benefit of two monsoons. However the main planting season is April - May. The crop is usually harvested from 8 to 10 months after planting. The total area under tapioca cultivation and the average yield per hectare for the years 1980-81 to 1982-83 are given in the following table:

Table : 2.7.1 Area and average yield of Tapioca

Period	Total cropped area (in Hect.)	Area under tapioca (Hect.)	Average yield per Hect. (Kg.)	Percentage of area under tapioca to total cropped area
1	2	3	4	5
1980-81	2884840	244990	16576	8.49
1981-82	2905257	248069	15097	8.54
1982-83	2862073	227617	16909	7.95

Source : T.R.S. Estimate

From the above table it is seen that 8 to 9% of the total cropped area is under tapioca.

2.7.1 Selected holdings:

180 holdings were selected for estimation of the cost of cultivation of tapioca throughout the year. The details of these holdings in each size class is given in the following table:

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Table : 2.7.1 Area and number of holdings selected

Period	Size class	Area under the crop in the sample	Percentage to total area of selected holdings	No. of selected holdings	Area per holding
1	2	3	4	5	6
1980-81	Small	7.14	9.06	77	0.09
	Medium	25.99	32.99	69	0.38
	Large	45.64	57.95	34	1.34
	Total	78.77	100.00	180	0.44
1981-82	Small	7.19	12.45	81	0.09
	Medium	20.84	36.09	71	0.29
	Large	29.71	51.46	28	1.06
	Total	57.74	100.00	180	0.32
1982-83	Small	7.46	11.94	81	0.09
	Medium	23.61	37.76	71	0.33
	Large	31.45	50.30	28	1.12
	Total	62.52	100.00	180	0.35

The hundred and eighty holdings studied for the periods under report had a total operational areas of 78.77, 57.74 and 62.52 hectares for the years 1980-81, 1981-82 and 1982-83 respectively. The average size of holdings in each round is 0.44 hect., 0.32 hect. and 0.35 hect. respectively.

2.7.2 Cost of cultivation of tapioca:

The cost of cultivation of tapioca is estimated under three different concepts of cost (viz. Cost 'A', Cost 'B' and Cost 'C') as stated in para 1.8 (Method of estimation).

2.7.2 (a) Cost 'A'

The estimated cost of different items per hect. and their percentage distribution to the total cost 'A' is given in the following table.

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Table : 2.7.2(a) Components of Cost 'A' per hectare of Tapioca for the years 1980-81, 1981-82 and 1982-83

Sl. No.	Items	Cost per Hect.		
		1980-81	1981-82	1982-83
1	2	3	4	5
1.	Labour cost (excluding household labour)	997 (55.95)	1052 (56.26)	1182 (58.11)
2.	Seed/Seedlings	85 (4.77)	70 (3.74)	107 (5.26)
3.	Farm yard manure	356 (19.98)	321 (17.17)	304 (14.95)
4.	Chemical Fertilizers	129 (7.24)	174 (9.31)	208 (10.23)
5.	Plant protection	N	N	N
6.	Irrigation Cess and Land Revenue	2 (0.11)	4 (0.21)	3 (0.15)
7.	Repair & maintenance charges of implements and machinery	52 (2.92)	81 (4.33)	41 (2.02)
8.	Interest on working capital	157 (8.81)	162 (8.66)	181 (8.89)
9.	Other expenses	4 (0.22)	6 (0.32)	8 (0.39)
	Total cost 'A'	1782 (100.00)	1870 (100.00)	2034 (100.00)

Figures in brackets give the percentage to the total cost 'A'
N - Negligible

The components of cost 'A' mentioned in the above table are discussed below:

i) Labour Cost:

Labour cost is the major component of cost 'A'. The cost estimated under this head is Rs.9.97/-, Rs.1052/- and Rs.1182/- for the years 1980-81, 1981-82 and 1982-83 respectively. It may be noted that 56 to 58% of the total cost 'A' comes under this item. When compared to other crops it is seen that the proportion of labour cost to total cost 'A' is highest in the case of tapioca cultivation. Hired human labour cost formed the major portion

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of the Labour Cost. It accounts 55% to 57% of the total cost 'A' during the period under report. The percentage of hired human labour hours engaged in tapioca cultivation to the total labour hours is given below for males and females separately for each size group of holdings for the three rounds of the survey.

Table : 2.7.2(a)-1 Percentage distribution of hired human labour hours engaged in tapioca cultivation to the total human labour hours

Period	Sex	Size class			
		Small	Medium	Large	Total
1	2	3	4	5	6
1980-81	Male	51.43	54.28	79.32	66.41
	Female	10.57	21.64	13.16	16.02
	Total	62.00	75.92	92.48	82.43
1981-82	Male	46.13	52.32	79.86	63.60
	Female	9.03	12.55	8.20	10.03
	Total	55.16	64.87	88.06	73.63
1982-83	Male	41.45	50.89	79.70	63.53
	Female	8.33	12.18	9.35	10.27
	Total	49.78	63.07	89.05	73.80

As in the case of paddy cultivation, the above table reveals that the proportion of hired human labour to total human labour input steadily increases with the increase in the size of holdings. Cultivators having 0.80 hectares and above are seen to depend for 88 to 92% of their requirements on hired labour.

(ii) Seed/Seedlings:

The seed/seedlings used by the cultivators for the cultivation are both home-grown and purchased. The average cost of seed per hect. used for the cultivation of tapioca is Rs.35/-, Rs.70/- and Rs.107/- for the years 1980-81, 1981-82 and 1982-83 respectively. The table also reveals that the cost of seed/seedlings per hect. as estimated from the survey is 4 to 5% of the total cost 'A'.

Contd....

Much variation is not noticed in the price of seed during the three rounds.

iii) Farm yard manure:

The expenditure per hectare of Farm yard manure works out to Rs.356/-, Rs.321/- and Rs.304/- for the years 1980-81, 1981-82 and 1982-83 respectively. During the period under report 15 to 20% of the total cost 'A' comes under this item. The percentage shows a decreasing trend. It decreased from 20% in 1980-81 to 15% in 1982-83.

iv) Chemical fertilizers:

The expenditure per hectare under this item is Rs.129/-, Rs.174/- and Rs.208/- for the respective years 1980-81, 1981-82 and 1982-83. It is seen from the above table that while farm yard manure shows a decreasing trend, the percentage of expenditure to total cost 'A' towards chemical fertilizers shows an increasing trend. It increased from 7% in 1980-81 to 10% in 1982-83.

v) Plant protection:

Only a very small amount comes under this item.

vi) Irrigation cess and Land Revenue:

Only Rs.2/- to Rs.4/- per hectare is noticed under this item for the period under report.

vii) Repair and maintenance charges of implements, machinery etc.

During the period under report 2 to 4% of the total cost 'A' accounts under this item. It comes to Rs.52/-, Rs.81/- and Rs.41/- for the years 1980-81, 1981-82 and 1982-83 respectively.

viii) Interest on working capital:

Interest on working capital is estimated at the rate of 10% for a period of one year. The estimated expenditure per hectare towards Interest on working capital is Rs.157/-, Rs.162/- and Rs.181/- for the years 1980-81, 1981-82 and 1982-83 respectively.

ix) Other expenses:

Only a very small percentage of cost 'A' is accounted under this item as shown in table 2.7.2(a)

Contd.....

2.7.2 (b) Cost 'B'

Cost 'B' is estimated by adding the estimated value of Interest on fixed capital to cost 'A' (vide para 1.8). The details are given in the following table:

Table: 2.7.2 (b) Estimated value of Cost 'B' per hectare (Rs.)

Sl. No.	Items	Cost per hectare		
		1980-81	1981-82	1982-83
1	2	3	4	5
1.	Cost 'A'	1782	1870	2034
2.	Interest on fixed capital	9027	10739	11503
3.	Cost 'B'	10809	12609	13537

It is seen that the estimated value of Cost 'B' for the years 1980-81, 1981-82 and 1982-83 is Rs.10809/-, Rs.12609/- and 13537/- respectively.

2.7.2 (c) Cost 'C'

Cost 'C' is estimated by adding the imputed value of household labour to Cost 'B' as stated in para 1.8. The table below shows the cost of the household labour for different years estimated at the rate of hired human labour.

Table : 2.7.2 (C) Estimated value of Cost 'C' per hectare

Sl. No.	Items	Cost 'C' per hectare		
		1980-81	1981-82	1982-83
1	2	3	4	5
1.	Cost 'B'	10809	12609	13537
2.	Household labour	206	353	401
3.	Cost 'C'	11015	12962	13938

Contd...

The above table reveals that the estimated expenditure on household labour works out to Rs.206/-, Rs.353/- and Rs.401/- for the years 1980-81, 1981-82 and 1982-83 respectively.

2.7.3. Estimated cost of tapioca cultivation under various cost concept

The estimated cost of tapioca cultivation under various cost concepts are given below.

Table: 2.7.3 Estimated cost of tapioca cultivation under various cost concepts

Concept of cost	Cost per hectare		
	1980-81	1981-82	1982-83
1	2	3	4
Cost 'A'	1782	1870	2034
Cost 'B'	10809	12609	13537
Cost 'C'	11015	12962	13938

The cost of cultivation under different cost concepts shows an increasing trend during the period under report.

2.8. GINGER

Planting of ginger in Kerala usually begins by the end of May or beginning of June before the commencement of the heavy rains. The crop takes nine to ten months to attain maturity. This crop is not widely cultivated like other cash crops. The area and the average yield of Ginger for the years 1980-81 to 1982-83 are given below.

Table: 2.8. Area and production of Ginger

Period	Total cropped area (in hect.)	Area under ginger	Average yield of dry ginger (in Kg.) per hectare	Percentage to total cropped area
1	2	3	4	5
1980-81	2884840	12662	2530	0.44
1981-82	2905257	13447	2557	0.46
1982-83	2862073	12662	2494	0.44

Source:- T.R.S. Estimate.

It can be seen from the above table that as per T.R.S. estimate the extent of area and the yield rate of ginger are fluctuating. This may be due to price fluctuations.

2.8.1 Selected holdings

During the year 1980-81, 1981-82 and 1982-83 the number of holdings selected were 129, 137 and 121 respectively.

Contd.....

The details of these holdings in each size class viz. small, medium and large are given below.

Table: 2.8.1. Total area under Ginger in each size class

Period	Size class	Area under the crop in sample	Percentage to total area of selected holdings	No. of selected holdings	Area per holding
1	2	3	4	5	6
1980-81	Small	5.12	30.31	84	0.06
	Medium	8.58	50.80	40	0.21
	Large	3.19	18.89	5	0.64
	Total	16.89	100.00	129	0.13
1981-82	Small	4.42	23.98	95	0.05
	Medium	9.90	53.72	32	0.31
	Large	4.11	22.30	10	0.41
	Total	18.43	100.00	137	0.13
1981-82	Small	4.54	27.55	92	0.05
	Medium	9.35	56.73	26	0.36
	Large	2.59	15.72	3	0.86
	Total	16.48	100.00	121	0.14

The number of holdings studied for the periods under report has a total operational area of 16.89, 18.43 and 16.48 hectares respectively. The average size of holding in each round was 0.13, 0.13 and 0.14 hectare respectively.

2.8.2. Cost of cultivation of ginger

The cost of cultivation of Ginger is estimated under the three different concepts of cost as mentioned in para 1.8 (Method of estimation)

Contd....

2.8.2(a) Cost 'A'

The estimates of cost of different items per hect. and their percentage distribution to the total cost 'A' per hect. are given in the following table.

Table 2.8.2 (a) Components of cost of cultivation (Cost 'A') per hectare of Ginger

Sl.No.	Items	Cost per hect. (in Rs.)		
		1980-81	1981-82	1982-83
1	2	3	4	5
1.	Labour cost	2602 (35.10)	3305 (31.87)	3142 (27.63)
2.	Seed/Seedlings	1613 (21.76)	2807 (27.07)	3628 (31.90)
3.	Farm yard manure	1822 (24.58)	2258 (21.78)	2299 (20.22)
4.	Chemical Fertilizers	623 (8.40)	963 (9.29)	1203 (10.58)
5.	Plant protection	32 (0.43)	20 (0.19)	9 (0.08)
6.	Land revenue and Irrigation cess	4 (0.05)	5 (0.05)	12 (0.11)
7.	Repair and maintenance charges of implements and machinery	25 (0.34)	16 (0.15)	7 (0.06)
8.	Interest on working capital	671 (9.06)	941 (9.07)	1032 (9.07)
9.	Other expenses	21 (0.28)	55 (0.53)	40 (0.35)
	Total (Cost 'A')	7413 (100.00)	10370 (100.00)	11372 (100.00)

(Figures in brackets give the percentage to the total cost 'A')

The various items mentioned in the above table are discussed below.

(i) Labour Cost

One of the major components of Cost 'A' is Labour Cost. The cost per hectare of ginger in this item works out to Rs.2602/-, Rs.3305/- and Rs.3142/- during the year 1980-81, 81-82 & 1982-83

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respectively. It may also be noted that 28 to 35% of the total cost 'A' comes under this item.

It is also seen that hired human labour cost formed the major portion of the labour cost. The percentage of hired human labour hours engaged in ginger cultivation to the total labour hours is given below for males and females separately for each size group of holdings for the three rounds of the survey.

Table : 2.8.2 (a) - 1. Percentage distribution of hired human labour

Period	Sex	Size class			
		Small	Medium	Large	Total
1	2	3	4	5	6
1980-81	Male	39.90	40.11	42.03	40.43
	Female	28.92	38.95	54.97	39.50
	Total	68.82	79.06	97.00	79.93
1981-82	Male	38.83	37.29	39.70	38.29
	Female	32.75	42.81	55.26	42.75
	Total	71.58	80.10	94.96	81.04
1982-83	Male	33.40	34.85	39.52	35.17
	Female	30.00	39.57	57.61	39.46
	Total	63.40	74.42	97.13	74.63

As in other crops, the above table reveals that the proportion of hired human labour to total human labour input steadily increases with the increase in the size of holdings. Cultivators having 0.80 hectares and above are seen to depend 75 to 81% of their requirements on hired human labour.

(ii) Seed/Seedlings

The seed/seedlings used by the cultivators for the cultivation are both home-grown and purchased. The average quantity of seed per hectare used by the cultivators is found to be 601 Kg., 726 Kg. and 707 Kg. during the years 1980-81, 1981-82 and 1982-83 respectively. The above table reveals that the cost of seed/seedlings per hectare as estimated from the survey is 22%, 27% and 32% of Cost 'A'

Contd....

for the years 1980-81, 1981-82 and 1982-83 respectively. Steep rise is noticed in the price of seed during 1982-83.

(iii) Farm yard manure

The expenditure per hectare towards farm yard manure works out to Rs.1822/-, Rs.2258/- and Rs.2299/- for the years 1980-81, 1981-82 and 1982-83 respectively. The expenditure on this item also shows an increasing trend. During the period under report 20 to 25% of the total cost (A) accounts under this item.

(iv) Chemical Fertilizers

The expenditure per hectare on this item works out to Rs.823/-, Rs.963/- and Rs.1203/- for the years 1980-81, 1981-82 and 1982-83 respectively. During the period under report 8 to 11% of the total cost 'A' comes under this item.

(v) Plant protection

The expenditure incurred on this item is rather negligible when compared to other items of expenditure. It was Rs.32/-, Rs.20/- and Rs.9/- per hectare for the years 1980-81, 1981-82 and 1982-83 respectively.

(vi) Irrigation and land revenue

Only a small percentage of total cost 'A' comes under this item.

(vii) Repair and maintenance charges of implements and machinery

Only a very small percentage of the total cost 'A' occurred in this item. The expenditure per hectare amounts to Rs.25/-, Rs.16/- and Rs.7/- for the years 1980-81, 1981-82 and 1982-83 respectively.

(viii) Interest on working capital

Interest on working capital per hectare is estimated at the rate of 10% for a period of one year. It is estimated that the average amount of Interest on working capital comes to Rs.671/-, Rs.941/- and Rs.1032/- for the years 1980-81, 1981-82 and 1982-83 respectively.

(ix) Other expenses

The other expenses per hectare amounts to Rs.21/-, Rs.55/- and Rs.40/- for the years 1980-81, 1981-82 and 1982-83 respectively.

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2.8.2(b) Cost 'B'

Cost 'B' is obtained by adding the estimated value of Interest on fixed capital (including land) to cost 'A' as mentioned in para 1.8. These details are given in the following table.

Table : 2.8.2(b) Estimated Value of Cost 'B' per hectare (in Rs.)

Sl. No.	Items	Cost per hectare		
		1980-81	1981-82	1982-83
1	2	3	4	5
1	Cost 'A'	7413	10370	11372
2	Interest on fixed capital	8076	11572	12539
3	Cost 'B'	15489	21942	23911

2.8.2 (C) Cost 'C'

Cost 'C' is estimated by adding the imputed value of household labour to Cost 'B' (Vide para 1.8). The table below shows the cost of the household labour for different years estimated at the rate of hired human labour.

Table: 2.8.2(c) Estimated value of cost 'C' per hectare (in Rs.)

Sl. No.	Items	Cost per hectare		
		1980-81	1981-82	1982-83
1	2	3	4	5
1.	Cost 'B'	15489	21942	23911
2.	Household labour	630	764	969
3.	Cost 'C'	16119	22706	24880

The above table reveals that the imputed value of household labour is Rs.630/-, Rs.764/- and Rs.969/- for the years 1980-81, 1981-82 and 1982-83 respectively.

Contd....

2.8.3 Estimated cost of ginger cultivation under various cost concepts

The estimated cost of ginger cultivation under various cost concepts, is given in the following table.

Table: 2.8.3 Estimated cost of Ginger cultivation per hectare

(Rs.)

Concept of cost	Cost per hectare		
	1980-81	1981-82	1982-83
Cost 'A'	7413	10370	11372
Cost 'B'	15489	21942	23911
Cost 'C'	16119	22706	24680

2.9 TURMERIC

Turmeric is a tropical herb and it can be grown on different types of soils both under irrigated and rainfed conditions. Rich loamy soils having good drainage are ideal for the crop. Planting is usually done during April with the receipt of pre-monsoon showers. The crop is usually harvested from 7 to 10 months after planting. Time of harvest depends upon the variety of plants grown. Generally the harvesting season extends from January to March. The extent of area under Turmeric and the average yield per hectare in Kerala for the years 1980-81 to 1982-83 are given in table 2.9.

Table : 2.9. Area and average yield of Turmeric

Period	Total cropped area	Area under turmeric	Average yield per hectare (in kg.)	Percentage to total cropped area
1	2	3	4	5
1980-81	2884840	3270	1878	2.13
1981-82	2905257	3200	1883	2.07
1982-83	2862073	2847	1824	1.81

Source : T.R.S. Estimate

The percentage of area under turmeric to total cropped area shows a decreasing trend during the period under report. It decreased from 2.13% in 1980-81 to 1.81% in 1982-83.

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2.9.1 Selected holdings

During the year 1980-81, 1981-82 and 1982-83 the number of holdings selected were 86, 51 and 46 respectively. The details of these holdings in each size class are given below:

Table : 2.9.1 Area under Turmeric in each size class for the year 1981-81 to 1982-83

Period	Size class	Area under the crop in the sample	Percentage to total area of selected holdings	No. of selected holdings	Area per holding
1	2	3	4	5	6
1980-81	Small	3.86	55.38	74	0.05
	Medium	3.11	44.62	12	0.26
	Large	..	..	..	..
	All	6.97	100.00	86	0.08
1981-82	Small	1.83	63.54	48	0.04
	Medium	1.05	36.46	3	0.35
	Large	..	..	..	..
	All	2.88	100.00	51	0.06
1982-83	Small	1.69	100.00	46	0.04
	Medium	..	..	..	..
	Large	..	..	..	..
	All	1.69	100.00	46	0.04

As it is rarely cultivated in Kerala, the target of 180 holdings could not be selected for the survey. The holdings belonging to large size were also not available for selection in the selected villages during the period under report. The holdings selected for the crop also decreased. Even the number of selected holdings showed a decreasing trend during the 2nd and 3rd rounds of the survey. The number of holdings studied for the periods under report had a total operational areas of 6.97, 2.88 and 1.69 hectares for the years 1980-81, 1981-82 and 1982-83 respectively. The average size of holding in each round was 0.08, 0.06 and 0.04 hectare respectively.

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2.9.2 Cost of cultivation:

As in the case of other crops, the cost of cultivation of this crop is estimated under the three different concepts of cost (viz. Cost 'A', cost 'B' and cost 'C') as stated in para 1.8 (method of estimation).

2.9.2. (a) Cost 'A'

The estimated cost of different items per hectare and their percentage distribution to the total cost 'A' are given in the following table,

Table : 2.9.2 (a) Cost of cultivation (Cost 'A') per hectare of turmeric for the years 1980-81 to 1982-83

Sl. No.	Items	Cost per hectare (in Rs.)		
		1980-81	1981-82	1982-83
1	2	3	4	5
1.	Labour cost	1155 (40.73)	1556 (43.01)	1575 (40.65)
2.	Seed/Seedlings	366 (12.91)	326 (9.01)	462 (11.92)
3.	Farm yard mannure	831 (29.30)	1018 (28.14)	1101 (28.41)
4.	Chemical fertilizers	94 (3.31)	271 (7.49)	268 (6.92)
5.	Plant protection	..	..	..
6.	Irrigation cess and Land revenue	6 (0.21)	5 (0.14)	4 (0.10)
7.	Repair and maintenance charges of implements & machinery	125 (4.41)	53 (1.46)	22 (0.57)
8.	Interest on working capital	246 (8.67)	324 (8.96)	377 (9.73)
9.	Other expenses	13 (0.46)	65 (1.80)	66 (1.70)
	Total (Cost 'A')	2836 (100.00)	3618 (100.00)	3875 (100.00)

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(i) Labour cost:

Labour cost is the major component of cost 'A'. The cost estimated under this head is Rs.1155/-, Rs.1556/- and Rs.1505/- for the years 1980-81, 1981-82 and 1982-83 respectively. It can be seen from the table that 38% to 43% of the total cost 'A' comes under this item. Hired human labour cost formed the major portion of the labour cost. The percentage of hired human labour hours engaged in turmeric cultivation to the total labour hours is given below for males and females separately for each size group of holdings for the three rounds of the survey.

Table : 2.9.2(a)-1 Percentage distribution of hired labour hours engaged in Turmeric cultivation to the total human labour hours

Period	Sex	Size class			
		Small	Medium	Large	All
1	2	3	4	5	6
1980-81	Male	36.19	37.19	..	36.60
	Female	19.61	34.33	..	25.68
	Total	55.80	71.52	..	62.28
1981-82	Male	22.50	44.74	..	27.02
	Female	12.94	40.34	..	18.52
	Total	35.44	85.08	..	45.54
1982-83	Male	12.82	..	..	12.82
	Female	10.66	..	..	10.66
	Total	23.48	..	..	23.48

The percentage of hired human labour hours decreased from 62% in 1980-81 to 23% in 1982-83. This may be due to the fact that in 1982-83, the holdings selected contained only small holdings.

(ii) Seed/Seedlings:

Both home grown and purchased seed/seedlings are used by the turmeric cultivators. The average cost of seed per hectare used for the cultivation of turmeric is Rs.366/-, Rs.326/- and Rs.462/- for the years 1980-81, 1982-82 and 1982-83 respectively. It comes 9 to 12% of the total cost 'A'.

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(iii) Farm yard mannure:

When all the sample holdings are taken together the expenditure per hectare on this item comes to Rs.831/-, Rs.1018/- and Rs.1100/- for the years 1980-81, 1981-82 and 1982-83 respectively. This accounts 28 to 29% of the total cost 'A'.

(iv) Chemical fertilizers:

Only 3 to 7% of the total cost 'A' comes under this item. The estimated cost per hectare on this item comes to Rs.94/-, Rs.271/- and Rs.268/- for the years 1980-81, 1981-82 and 1982-83 respectively.

(v) Plant protection:

No expenditure is noted under this item.

(vi) Irrigation cess and land revenue

Only a negligible percentage of expenditure has been incurred towards irrigation cess and land Revenue.

(vii) Repair and maintenance charges of implements & machinery

The estimated expenditure on this item per hectare of turmeric cultivation comes to Rs.125/-, Rs.53/- and Rs.22/- for the years 1980-81, 1981-82 and 1982-83 respectively. This accounts only 1 to 4% of the total cost 'A'.

(viii) Interest on working capital:

The average amount of interest on working capital is estimated Rs.246/-, Rs.324/- and Rs.377/- for the years 1980-81, 1981-82 and 1982-83 respectively.

(ix) Other expenses:

The cost accounted in this item is only Rs.13/-, Rs.65/- and Rs.66/- for the years 1980-81, 1981-82 and 1982-83 respectively.

2.9.2 (b) Cost 'B'

Cost 'B' is estimated by adding the imputed value of interest on fixed capital to cost 'A' as mentioned in the estimation procedure in para 1.8.

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The following table gives the estimated cost 'B' per hectare of turmeric cultivation.

Table: 2.9.2(b) Estimated cost 'B' per hectare (Rs.)

Items	Cost per hectare (Rs.)		
	1980-81	1981-82	1982-83
1	2	3	4
Cost 'A'	2836	3618	3875
Interest on fixed capital	9583	10958	10864
Cost 'B'	12419	14576	14739

It is seen that the estimated cost 'B' per hectare shows an increasing trend. It increased from Rs.12419/- in 1980-81 to Rs.14739/- in 1982-83.

2.9.2(c) Cost 'C'

Cost 'C' is estimated by addking the imputed value of household labour to cost 'B' (vide para 1.8). The table below shows the cost of the household labour for different years estimated at the rate of hired human labour.

Table : 2.9.2(c) Estimated cost 'C' per hectare of Turmeric cultivation

Item	Cost C per hectare (in Rs.)		
	1980-81	1981-82	1982-83
1	2	3	4
Cost 'B'	12419	14576	14739
Household labour	567	249	296
Cost 'C'	12986	14825	15035

It is seen from the above table that Cost 'C' per hectare on turmeric cultivation works out to Rs.12986/-, Rs.14825/- and Rs.15035/- for the years 1980-81, 1981-82 and 1982-83 respectively.

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2.9.3 Comparison of cost of cultivation under various cost concepts

The estimated cost per hectare of turmeric cultivation is given in Table 2.9.3.

Table : 2.9.3 Estimated cost per hectare (Rs.)

Concept of cost	1980-81	1981-82	1982-83
1	2	3	4
Cost 'A'	2836	3618	3874
Cost 'B'	12419	14576	14738
Cost 'C'	12986	14825	15024

The cost of cultivation under various cost concept shows an increasing trend.

CHAPTER 3 - SUMMARY OF FINDINGS

3.1. Autumn paddy

3.1.1. The cost of cultivation of autumn paddy per hectare (ie. cost 'A') is estimated to be Rs.2773/-, Rs.3695/- and Rs.3943/- for the years 1980-81, 1981-82 and 1982-83 respectively.

3.1.2. Taking into consideration the imputed value of household labour and interest on fixed capital the cost of cultivation of autumn paddy per hectare (ie. cost 'C') is estimated to be Rs.4787/-, Rs.6169/- and Rs.6882 respectively.

3.1.3. Labour cost constitutes 61% of the total cost 'A'.

3.1.4. The cost of seed/seedlings constitutes 8% of the total cost 'A' during the period under report.

3.1.5. The percentage of cost towards farm yard manure and chemical fertilizers ranges from 17% to 20%.

3.1.6. The imputed value of household labour ranges from 1% to 3% of the total cost 'C'.

3.2. Winter paddy

3.2.1. The cost of cultivation of winter paddy per hectare ie, cost 'A' is estimated to be Rs.3268/-, Rs3822/- and Rs3921/- for the years 1980-81, 1981-82 and 1982-83 respectively.

3.2.2. Taking into consideration, the imputed value of household labour and interest on fixed capital, the cost of cultivation of winter paddy per hectare (cost 'C') is estimated to be Rs.5350/-, Rs.7074/- and Rs7608/-.

3.2.3. Labour cost constitutes 61% to 62% of the total cost 'A'.

3.2.4. 8% to 10% of the total cost 'A' comes under the cost of seed/seedlings.

3.2.5. The percentage of cost towards farm yard manure and chemical fertilizers ranges from 18% to 19% of the total cost 'A'.

3.2.6. The imputed value of household labour ranges from 2% to 3% of the total cost 'C'.

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3.3. Summer paddy

3.3.1. The cost of cultivation of summer paddy per hectare (cost 'A') is estimated to be Rs.3256/-, Rs4325/- and Rs5064/- respectively for the years 1980-81, 1981-82 and 1982-83.

3.3.2. The cost of cultivation of summer paddy per hectare (cost 'C') is estimated to be Rs.6094/-, Rs7385/- and Rs8106/- respectively.

3.3.3. Labour cost constitutes 59% to 64% of the total cost 'A'.

3.3.4. The cost of seed/seedlings constitutes 5% to 7% of the total cost 'A'.

3.3.5. The percentage of cost towards farm yard manure and chemical fertilizers ranges from 16% to 20% of the total cost 'A'.

3.3.6. The imputed value of household labour ranges from 3% to 6% of the total cost 'C'.

3.4. Coconut:

3.4.1. The cost of cultivation of coconut per hectare (ie. cost 'A') is estimated to be Rs.2739/-, Rs2849/- and Rs2885/- respectively for the years 1980-81, 1981-82 and 1982-83 respectively.

3.4.2. Taking into consideration, the imputed value of household labour and interest on fixed capital, the cost of cultivation of coconut per hectare (ie. cost 'C') is estimated to be Rs.14526/-, Rs15514/- and Rs17938/- respectively for the years 1980-81, 1981-82 and 1982-83.

3.4.3. Labour cost constitutes 50% to 54% of the total cost 'A'.

3.4.4. The percentage of cost towards farm yard manure and chemical fertilizers ranges from 24% to 30%.

3.4.5. The imputed value of household labour ranges from 0.5% to 1.4% of the total cost 'C'.

3.5. Arecanut:

3.5.1. The cost of cultivation of arecanut per hectare (cost 'A') is estimated to be Rs.2587/-, Rs3150/- and Rs3443/- respectively for the years 1980-81, 1981-82 and 1982-83 respectively.

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3.5.2. The cost of cultivation of arecanut per hectare (cost 'C') is estimated to be Rs.13223/-, Rs.15437/- and Rs.17200/- respectively.

3.5.3. Labour cost constitutes 50% to 57% of the total cost 'A'.

3.5.4. The percentage of cost towards farm yard manure and chemical fertilizers ranges from 23% to 28% of the total cost 'A'.

3.5.5. The imputed value of household labour ranges from 2% to 3% of the total cost 'C'.

3.6. Pepper:

3.6.1. The cost of cultivation of pepper per hectare (cost 'A') is estimated to be Rs.1506/-, Rs.1579/- and Rs.1545/- respectively for the years 1980-81, 1981-82 and 1982-83.

3.6.2. Taking into account the imputed value of household labour and interest on fixed capital, the cost of cultivation of pepper per hectare (cost 'C') is estimated to be Rs.8863/-, Rs.9194/- and Rs.9972/- respectively.

3.6.3. The labour cost constitutes 49% to 56% of the total cost 'A'.

3.6.4. The percentage of cost towards Farm yard manure and chemical fertilizers ranges from 26% to 31% of the total cost 'A'.

3.6.5. The imputed value of household labour is 2% of the total cost 'C'.

3.7. Tapioca:

3.7.1. The cost of cultivation of tapioca per hectare (cost 'A') is estimated to be Rs.1782/-, Rs.1870/- and Rs.2034/- respectively for the years 1980-81, 1981-82 and 1982-83.

3.7.2. Taking into consideration the imputed value of household labour and interest on fixed capital, the cost of cultivation of tapioca per hectare (cost 'C') is estimated to be Rs.11015/-, Rs.12962/- and Rs.13938/- respectively.

3.7.3. Labour cost constitutes 56% to 58% of the total cost 'A'.

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3.7.4. 4% to 5% of the total cost 'A' comes under seed/ seedling during the period under report.

3.7.5. The percentage of cost towards farm yard manure and chemical fertilizers ranges from 25% to 27% of the total cost 'A'.

3.7.6. The imputed value of household labour ranges from 2% to 3% of the total cost 'C'.

3.8. Ginger:

3.8.1. The cost of cultivation of ginger per hectare (cost 'A') is estimated to be Rs.7413/-, Rs.10370/- and Rs.11372/- respectively for the years 1980-81, 1981-82 and 1982-83.

3.8.2. Taking into consideration the imputed value of household labour and interest on fixed capital, the cost of cultivation of ginger per hectare (cost 'C') is estimated to be Rs.16119/-, Rs.22706/- and Rs.24880/- respectively.

3.8.3. Labour cost constitutes 28% to 35% of the total cost 'A'.

3.8.4. The cost of seed/seedlings constitutes 22% to 32% of the total cost 'A' during the period under report.

3.8.5. The percentage of cost towards farm yard manure and chemical fertilizers ranges from 31% to 33% of the total cost 'A'.

3.8.6. The imputed value of household labour ranges from 3% to 4% of the total cost 'C'.

3.9. Turmeric:

3.9.1. The cost of cultivation of turmeric per hectare (cost 'A') is estimated to be Rs.2836/-, Rs.3618/- and Rs.3875/- respectively for the years 1980-81, 1981-82 and 1982-83.

3.9.2. Taking into consideration, the imputed value of household labour and interest on fixed capital, the cost of cultivation of turmeric per hectare (cost 'C') is estimated to be Rs.12986/-, Rs.14825/- and Rs.15035/- respectively.

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3.9.3. Labour cost constitutes 41% to 43% of the total cost 'A'.

3.9.4. The cost of seed/seedlings constitute 9% to 13% of the total cost 'A'.

3.9.5. The percentage of cost towards farm yard manure and chemical fertilizers ranges from 33% to 36% of the total cost 'A'.

3.9.6. The imputed value of household labour ranges from 2% to 4% of the total cost 'C'.

Appendix - 1 Cost of Cultivation Per Hectare of Autumn Paddy for the Year 1980-81, 1981-82, 1982-83.

Sl. No.	Components of different cost concepts	Period	Small	Medium	Large	Total
1	2	3	4	5	6	7
1	Hired Human Labour	1980-81	1320	1391	1354	1366
		1981-82	1569	1799	1846	1796
		1982-83	1642	1837	1787	1791
2	Animal Labour	1980-81	356	308	239	285
		1981-82	453	394	249	326
		1982-83	358	395	200	294
3	Machine Labour	1980-81	18	51	50	46
		1981-82	60	48	106	79
		1982-83	27	36	122	78
4	Seed/Seedling	1980-81	231	198	232	217
		1981-82	281	271	280	277
		1982-83	335	320	248	286
5	Farm Yard Manure	1980-81	334	340	222	288
		1981-82	472	482	189	329
		1982-83	444	437	150	295
6	Chemical Fertilizers	1980-81	269	222	323	272
		1981-82	294	307	293	298
		1982-83	285	261	408	337
7	Plant Protection	1980-81	12	9	13	11
		1981-82	152	24	157	108
		1982-83	15	7	26	17
8	Land Revenue and Irrigation Cess	1980-81	12	9	13	11
		1981-82	12	11	18	15
		1982-83	10	9	8	8
9	Repair and maintenance charge of implements, machinery and buildings	1980-81	143	153	39	103
		1981-82	87	85	58	71
		1982-83	136	128	177	153
10	Interest on working capital	1980-81	132	128	123	127
		1981-82	173	175	164	169
		1982-83	159	168	156	161
11	Other expenses	1980-81	105	43	34	47
		1981-82	172	172	162	167
		1982-83	66	69	179	123
12	Total Cost A.	1980-81	2932	2852	2642	2773
		1981-82	3725	3768	3522	3635
		1982-83	3477	3667	3461	3543

(Contd--2/-)

Appendix-1 (Contd.)

1	2	3	4	5	6	7
13	Interest on fixed capital	1980-81 1981-82 1982-83	2174 3123 3440	1863 2992 3387	1951 1758 2956	1943 2368 3351
14	Cost. B.	1980-81 1981-82 1982-83	5106 6848 6917	4715 6760 7054	4593 5289 6357	4716 6003 6697
15	Imputed value of household Labour	1980-81 1981-82 1982-83	239 478 609	75 178 237	15 88 50	71 166 185
16	Cost. C.	1980-81 1981-82 1982-83	5345 7326 7526	4790 6938 7291	4608 5368 6417	4787 6169 6982

Appendix-2· Percentage distribution of Components of Cost 'A' of Autumn Paddy Cultivation for the year 1980-81 to 1982-83·

Sl· No·	Items	Period	Small	Medium	Large	All
1	2	3	4	5	6	7
1	Hired Human Labour	1980-81	45·02	48·77	51·25	49·26
		1981-82	42·12	47·74	52·41	49·41
		1982-83	47·22	50·10	51·63	50·55
2	Animal Labour	1980-81	12·14	10·80	9·05	10·28
		1981-82	12·16	10·47	7·07	8·97
		1982-83	10·30	10·77	5·78	8·30
3	Machine Labour	1980-81	0·61	1·79	1·89	1·66
		1981-82	1·62	1·27	3·01	2·18
		1982-83	0·78	0·98	3·52	2·20
4	Seed/Seedling	1980-81	7·88	6·94	8·78	7·83
		1981-82	7·54	7·19	7·95	7·62
		1982-83	9 63	8 73	7·17	8·07
5	Farm Yard Manure	1980-81	11·39	11·92	8·40	10·39
		1981-82	12·67	12·79	5·37	9·05
		1982-83	12·77	11·92	4·33	8·33
6	Chemical Fertilizers	1980-81	9.17	7.78	12·22	9.81
		1981-82	7·89	8·15	8·31	8·20
		1982-83	8·20	7·11	11·79	9·51
7	Plant protection	1980-81	0.41	0.32	0·49	0.40
		1981-82	4·08	0·64	4·46	2·97
		1982-83	0·43	0·19	0·75	0·48
8	Land Revenue and Irrigation Cess	1980-81	0.41	0·32	0·49	0.40
		1981-82	0·32	0·29	0·51	0·41
		1982-83	0·29	0.25	0·23	0·23
9	Repair and maintenance charge of implements, machinery and buildings·	1980-81	4·88	5·36	1·48	3·71
		1981-82	2·34	2·26	1·65	1·95
		1982-83	3·91	3·49	5·11	4·32
10	Interest on working capital	1980-81	4·50	4·49	4·66	4·58
		1981-82	4·64	4·64	4·66	4·65
		1982-83	4·57	4·58	4·51	4·54
11	Other expenses	1980-81	3·59	1·51	1·29	1·68
		1981-82	4·62	4·56	4·60	4·59
		1982-83	1·90	1·88	5·17	3·47
12	TOTAL COST (A)	1980-81	100·00	100.00	100·00	100·00
		1981-82	100·00	100·00	100·00	100·00
		1982-83	100·00	100·00	100·00	100·00

Apperdix-3. Cost of Cultivation Per Hectare of Winter Paddy for the Year 1980-81, 1981-82 and 1982-83.

Sl. No.	Items	Period	Small	Medium	Large	All
1	2	3	4	5	6	7
1	Hired Human Labour	1980-81	1367	1689	1598	1609
		1981-82	1655	1851	1963	1859
		1982-83	1737	1912	1847	1864
2	Animal Labour	1980-81	408	348	311	342
		1981-82	451	380	334	371
		1982-83	480	315	514	411
3	Machine Labour	1980-81	39	54	144	87
		1981-82	39	51	161	93
		1982-83	44	22	246	103
4	Seed/Seedling	1980-81	365	295	316	313
		1981-82	349	313	310	317
		1982-83	392	336	510	408
5	Farmyard Manure	1980-81	462	423	333	394
		1981-82	411	414	207	332
		1982-83	475	357	237	328
6	Chemical Fertilizers	1980-81	293	241	190	229
		1981-82	368	348	483	403
		1982-83	384	240	549	374
7	Plant Protection	1980-81	22	13	6	12
		1981-82	68	45	120	79
		1982-83	29	13	33	23
8	Land Revenue and Irrigation Cess	1980-81	19	12	23	17
		1981-82	27	7	15	13
		1982-83	15	14	25	18
9	Repair and maintenance charges of implements, machinery and Buildings	1980-81	78	165	48	108
		1981-82	99	76	113	94
		1982-83	172	95	102	108

(Contd---2/-)

1	2	3	4	5	6	7
10	Interest on working Capital	1980-81 1981-82 1982-83	148 173 181	154 173 164	145 183 203	150 177 181
11	Other expenses	1980-81 1981-82 1982-83	5 111 84	13 60 82	1 82 125	7 75 98
12	Total Cost (Cost A)	1980-81 1981-82 1982-83	3206 3751 3993	3407 3718 3550	3115 3971 4394	3268 3822 3923
13	Interest on Fixed Capital	1980-81 1981-82 1982-83	3431 2802 3923	1803 2960 3446	1681 3240 3213	1982 3049 3424
14	Cost B	1980-81 1981-82 1982-83	6637 6553 7916	5210 6678 6996	4796 7211 7607	5250 6871 7345
15	Imputed value of household Labour	1980-81 1981-82 1982-83	333 629 780	95 167 286	23 182 43	100 203 263
16	Cost C	1980-81 1981-82 1982-83	6970 7182 8696	5305 6845 7282	4819 7393 7650	5350 7074 7608

APPENDIX-

Appendix-4 Percentage distribution of Components of Cost 'A' of Winter Paddy Cultivation for the year 1980-81 to 1982-83.

Sl. No.	Items	Period	Small	Medium	Large	All
1	2	3	4	5	6	7
1.	Hired human labour	1980-81	42.64	49.57	51.30	49.24
		1981-82	44.12	49.78	49;43	48.90
		1982-83	43.50	53.86	42.03	47.53
2.	Animal labour	1980-81	12.73	10.21	9.98	10.47
		1981-82	12.02	10.22	8.41	9.71
		1982-83	12.02	8.87	11.70	10.48
3.	Machine labour	1980-81	1.22	1.58	4.62	2.66
		1981-82	1.04	1.37	4.05	2.43
		1982-83	1.10	0.62	5.60	2.75
4.	Seed/Seedling	1980-81	11.37	8.66	10.14	9.58
		1981-82	9.30	8.42	7.81	8.89
		1982-83	9.82	9.45	11.61	10.41
5.	Farm yard manure	1980-81	14.41	12.42	10.69	12.05
		1981-82	10.97	11.14	5.21	8.69
		1982-83	11.90	10.06	5.40	8.57
6.	Chemical Fertilizers	1980-81	9.14	7;07	6.10	7.01
		1981-82	9.81	9.35	12.16	10.54
		1982-83	9.62	6.76	12.50	9.53
7.	Plant protection	1980-81	0.69	0.38	0.20	0.37
		1981-82	1.80	1.21	3.02	2.04
		1982-83	0.73	0.37	0.79	0.59
8.	Land Revenue and Irrigation Cess	1980-81	0.59	0.53	0.74	0.52
		1981-82	0.72	0.19	0.38	0.34
		1982-83	0.38	0.39	0.59	0.47
9.	Repair and maintenance charge of implements, machinery & buildings.	1980-81	2.43	4.85	1.55	3.30
		1981-82	2.64	2.05	2.85	2.46
		1982-83	4.31	2.68	2.32	2.75
10.	Interest on working capital	1980-81	4.62	4.52	4.65	4.59
		1981-82	4.61	4.65	4.61	4.63
		1982-83	4.53	4.62	4.62	4.62
11	Other expenses	1980-81	0.16	0.39	0.03	0.21
		1981-82	2.96	1.61	2.07	1.97
		1982-83	2.11	2.31	2.84	2.50
12.	TOTAL COST (A)	1980-81	100.00	100.00	100.00	100.00
		1981-82	100.00	100.00	100.00	100.00
		1982-83	100.00	100.00	100.00	100.00

Appendix-5 Cost of cultivation per Hectare of Summer Paddy for the years 1980-81, 1981-82 and 1982-83.

Sl. No.	Components of different Cost concepts	Period	Small	Medium	Large	All
1.	2	3	4	5	6	7.
1	Hired Human Labour	1980-81	1529	1602	1901	1703
		1981-82	1664	2276	2221	2096
		1982-83	2108	2379	2929	2623
2	Animal Labour	1980-81	286	232	294	271
		1981-82	439	375	208	297
		1982-83	413	401	185	288
3	Machine Labour	1980-81	113	78	105	97
		1981-82	45	72	209	142
		1982-83	81	109	192	148
4	Seed/Seedling	1980-81	231	210	213	216
		1981-82	288	245	281	276
		1982-83	258	300	237	259
5	Farm yard Manure	1980-81	79	71	10	47
		1981-82	508	212	79	209
		1982-83	334	218	8	127
6	Chemical Fertilizers	1980-81	358	338	631	467
		1981-82	388	657	752	645
		1982-83	538	729	895	783
7	Pesticides and Insecticides	1980-81	32	106	231	143
		1981-82	89	282	152	162
		1982-83	54	224	206	184
8	Land Revenue and Irrigation Cess	1980-81	22	23	52	38
		1981-82	18	35	26	26
		1982-83	13	42	19	25
9	Repair and maintenance on charge of Implements, machinery and Buildings	1980-81	45	135	52	79
		1981-82	119	181	185	168
		1982-83	25	61	359	214
10	Interest on working Capital	1980-81	133	135	210	158
		1981-82	183	214	205	202
		1982-83	202	227	243	231

Appendix-5 contd..

Appendix - 5 (Continuation

1	2	3	4	5	6	7
11	Other expenses	1980-81 1981-82 1982-83	30 152 139	57 180 177	46 54 200	47 102 182
12	Total (Cost A)	1980-81 1981-82 1982-83	2858 3893 4165	2987 4729 4867	3795 4372 5472	3256 4305 5064
13	Interest on Fixed Capital	1980-81 1981-82 1982-83	2833 3037 2578	3644 3930 3358	2196 2210 2182	2674 2754 2593
14	Cost (B)	1980-81 1981-82 1982-83	5691 6930 6743	6631 8659 8225	5991 6582 7654	5930 7059 7657
15	Imputed value of household labour	1980-81 1981-82 1982-83	571 874 1376	79 327 342	16 53 199	164 306 449
16	Cost (C)	1980-81 1981-82 1982-83	6262 7854 8119	6710 8986 8567	5917 6635 7853	6094 7365 8106

Appendix-6 Percentage distribution of Components of Cost 'A' of Summer Paddy cultivation for the years 1980-81 to 1982-83

Sl. No.	Items	Period	Small	Medium	Large	All
1	2	3	4	5	6	7
1	Hired human labour	1980-81	53.50	53.63	51.31	52.61
		1981-82	42.74	48.13	50.80	48.45
		1982-83	50.01	48.88	53.51	51.80
2	Animal labour	1980-81	10.01	7.77	7.94	8.32
		1981-82	11.28	7.93	4.76	6.87
		1982-83	9.92	8.24	3.38	5.69
3	Machine labour	1980-81	3.95	2.61	2.83	2.99
		1981-82	1.15	1.52	4.78	3.29
		1982-83	1.94	2.24	3.51	2.92
4	Seed/Seedling	1980-81	8.08	7.03	5.75	6.84
		1981-82	7.40	5.18	6.43	6.38
		1982-83	6.19	6.15	4.33	5.11
5	Farm yard manure	1980-81	2.76	2.38	0.28	1.44
		1981-82	13.05	4.48	1.81	4.83
		1982-83	8.02	4.48	0.15	2.51
6	Chemical Fertilizers	1980-81	12.53	11.31	17.03	14.34
		1981-82	9.97	13.89	17.20	14.92
		1982-83	12.92	14.98	16.36	15.46
7	Plant protection	1980-81	1.12	3.55	6.23	4.39
		1981-82	2.29	5.96	3.48	3.75
		1982-83	1.30	4.60	3.76	3.63
8	Land Revenue and Irrigation Cess	1980-81	0.77	0.77	0.32	0.55
		1981-82	0.46	0.74	0.59	0.60
		1982-83	0.31	0.86	0.35	0.49
9	Repair & maintenance charge of implements, machinery & buildings	1980-81	1.58	4.52	1.40	2.43
		1981-82	3.06	3.82	4.23	3.88
		1982-83	0.60	1.25	6.56	4.23
10	Interest on working capital	1980-81	4.65	4.52	5.67	4.85
		1981-82	4.70	4.53	4.70	4.67
		1982-83	4.85	4.66	4.44	4.56
11	Other expenses	1980-81	1.05	1.91	1.24	1.44
		1981-82	3.90	3.88	1.24	2.36
		1982-83	3.34	3.65	3.65	3.60
12	Total Cost (A)	1980-81	100.00	100.00	100.00	100.00
		1981-82	100.00	100.00	100.00	100.00
		1982-83	100.00	100.00	100.00	100.00

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Appendix-7 Cost of Cultivation Per Hectare of Coconut

Sl. No.	Items	Cost of Cultivation per Hectare (Rs)		
		1980-81	1981-82	1982-83
1.	2	3	4	5
1	Labour cost (excluding household labour)	1376	1423	1549
2	Seed/Seedling	16	3	17
3	Farmyard manure	576	592	585
4	Chemical Fertilizer	246	183	114
5	Plant protection	5	3	8
6	Irrigation cess and land revenue	3	3	5
7	Repair and maintenance of implements and machinery	140	164	102
8	Interest on working capital	236	244	252
9	Other expenses	141	234	253
10	Total cost (A)	2739	2849	2885
11	Interest on fixed capital	11706	12442	14868
12	Cost 'B' (B)	14445	15291	17753
13	Imputed value of household labour	81	223	185
14	Cost 'C' (C)	14526	15514	17938

Appendix - 9 Cost of cultivation per hectare of Pepper for the years 1980-81, '81-'82, '82-'83.

Sl. No.	Items	Cost per hectare (s)		
		1980-81	1981-82	1982-83
1	2	3	4	5
1	Labour cost	739	881	845
2	Seed/Seedling	5	4	11
3	Farm yard manure	410	429	382
4	Chemical Fertilizers	64	10	17
5	Plant protection	39	41	55
6	Irrigation Cess and Land Revenue	11	3	3
7	Repair and maintenance of implements, machinery, etc.	87	63	64
8	Interest on working capital	128	110	116
9	Other expenses	23	38	55
10	Total Cost (A)	1506	1579	1545
11	Interest on fixed capital	7138	7403	8202
12	Cost (B)	8644	8982	9747
13	Imputed value of household labour	219	212	225
14	Cost (C)	8863	9194	9972

Appendix-10 Cost of cultivation per hectare of Tapioca for the years 1980-'81, 1981-'82 and 1982-'83.

Sl. No.	Items	Cost per hectare (Rs)		
		1980-81	1981-82	1982-83
1	2	3	4	5
1	Labour cost	997	1052	1182
2	Seed/Seedlings	85	70	107
3	Farm yard manure	356	321	304
4	Chemical Fertilizers	129	174	208
5	Plant protection	N	N	N
6	Irrigation Cess and Land Revenue	2	4	3
7	Repair and maintenance charge of implements and machinery	52	81	41
8	Interest on working capital	157	162	181
9	Other expenses	4	6	8
10	Cost (A)	1782	1870	2034
11	Interest on fixed capital	9027	10739	11503
12	Cost (B)	10809	12609	13537
13	Imputed value of household labour	206	353	401
14	Cost (C)	11015	12962	13938

Appendix-11 Cost of cultivation per hectare of Ginger for the years 1980-'81, 1981-'82 and 1982-'83.

Sl. No.	Items	Cost per hectare (Rs)		
		1980-81	1981-82	1982-83
1	2	3	4	5
1	Labour cost	2602	3305	3142
2	Seed/Seedling	1613	2807	3628
3	Farm yard manure	1822	2258	2299
4	Chemical Fertilizers	623	963	1203
5	Plant protection	32	20	9
6	Irrigation Cess and Land Revenue	4	5	12
7	Repair and mainterance of implements, machinery etc.	25	16	7
8	Interest on working capital	671	941	1032
9	Other expenses	21	55	40
10	Cost (A)	7413	10370	11372
11	Interest on fixed capital	8076	11572	12539
12	Cost (B)	15489	21942	23911
13	Imputed value of house hold labour	630	764	969
14	Cost (C)	16119	22706	24880

Appendix - 12 Cost of cultivation per hectare of Turmeric for the years 1980-'81, 1981-'82 and 1982-'83.

Sl. No.	Items	Cost per hectare (Rupees)		
		1980-81	1981-82	1982-83
1	2	3	4	5
1	Labour cost (excluding household labour)	1155	1556	1575
2	Seed/Seedling	366	326	462
3	Farm yard manure	831	1018	1101
4	Chemical Fertilizers	94	271	263
5	Plant protection	--	--	--
6	Irrigation Cess and Land Revenue	6	5	4
7	Repair and maintenance of implements, machinery	125	53	22
8	Interest on working capital	246	324	377
9	Other expenses	13	65	66
10	Cost (A)	2836	3618	3875
11	Interest on fixed capital	9583	10958	10864
12	Cost (B)	12419	14576	14739
13	Imputed value of household labour	567	249	296
14	Cost (C)	12986	14825	15035